

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

2HD1992

• U55
Copy 4

SL

United States
Department of
Agriculture

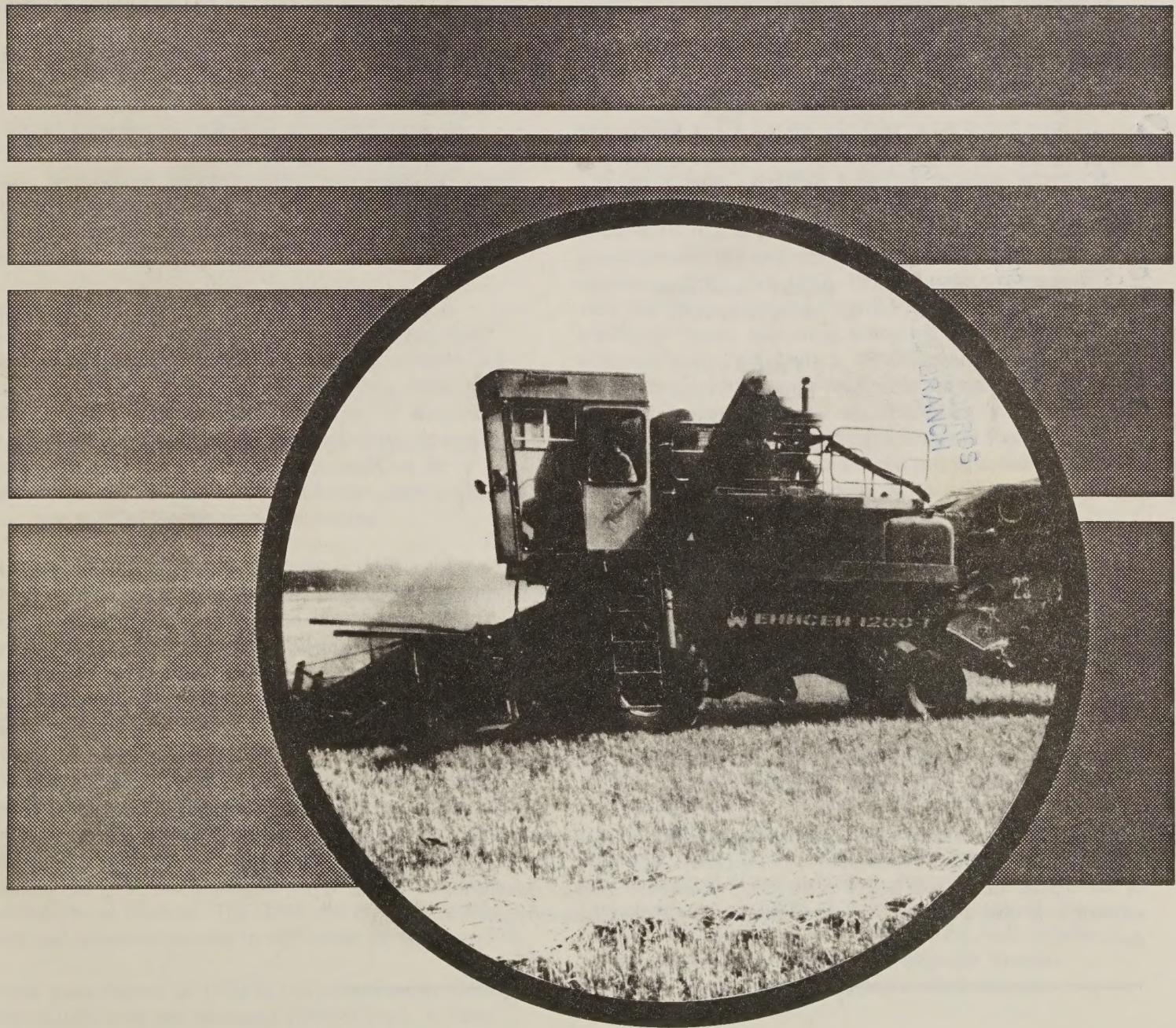
Economic
Research
Service

RS-90-1
May 1990

USSR

Agriculture and Trade Report

Situation and Outlook Series



Contents

Economic Problems Continue	4
Half Measures in Agricultural Reform	9
Input Supply and Effectiveness	12
USSR Agricultural Trade in the 1990's	17
Modeling Soviet Agricultural Trade Liberalization	22
U.S.-USSR Trade	25
Commodity Markets	32
Grain Imports Remain Important	32
New Trade Environment for Livestock Products	40
Need for Imported Protein Feed	44
Sugar Imports Could Fall	47
Cotton Exports May Fall Substantially	49
Notes	52
List of Tables	54

Report Coordinator
Kathryn Zeimetz

Contributors
Edward C. Cook
Christian J. Foster
William M. Liefert
Yuri Markish
Kathryn Zeimetz

Approved by the World Agricultural Outlook Board. Summary released May 16, 1990.
USSR: Agriculture and Trade Report is one of five annual reports in the World Agricultural Regional series. Other titles are *China*, *Western Europe*, *Pacific Rim*, and *Developing Economies*.

Summaries of the reports, including tables, may be accessed electronically through the USDA EDI system. For details, call (202) 447-5505.

Subscriptions are available from ERS-NASS, P.O. Box 1608, Rockville, MD 20849-1608. Or call, toll free, 1-800-999-6779 (weekdays, 8:30-5:00 ET). Rates for the series of five reports are: 1 year \$12, 2 years \$23, 3 years \$33. Add 25 percent for subscriptions mailed outside the United States. Single copies are available for \$8.00 each.

Summary

The USSR was the second largest importer of U.S. farm products in 1989, buying a record \$3.6 billion. The United States supplied almost a fifth of Soviet agricultural imports and about two-thirds of grain imports. The United States continues as the predominant supplier of the USSR's hard currency nontropical imports.

U.S. agricultural exports to the USSR must capture a larger market share to expand because Soviet agricultural imports may not increase. The United States captures large shares of the Soviet market for its agricultural commodities that have a comparative price advantage, unless U.S. sales are undercut by other exporters' subsidies. The Soviets purchased 18.6 million tons of U.S. corn in 1989, 90 percent of their corn imports. USDA's Export Enhancement Program bonuses of \$620 million helped make the United States the largest Soviet wheat supplier since 1987. Although recent U.S. chicken leg sales benefited from Soviet interest in low-priced meat, the USSR likes Argentine and Brazilian pelletized soybean meal. If the USSR begins to widely use agricultural credit programs offered by Western governments, U.S. competitiveness could be helped by export credit guarantees.

Despite recent economic and political changes, East European countries may continue to import energy and other goods from the USSR because of technological and infrastructure ties. They may have to pay for these imports with substantial food exports to the USSR. If Western government guarantees of ruble convertibility, for exporters accepting rubles, were instituted, they could act as subsidies to the Soviets. Indirect subsidies, such as these, may help to delay Soviet economic reform.

Granting the USSR most-favored-nation (MFN) status would raise its export earnings only slightly and, thus, its ability to fund agricultural imports. But, granting MFN status to the USSR poses little economic harm to U.S. farmers. Tentative terms of a new 5-year U.S.-USSR grain agreement raise the current agreement's minimum and maximum.

Soviet agricultural imports could fall somewhat in 1990. Lower grain imports and prices, and lower sugar imports, might offset higher meat and vegetable oil imports. The USSR's ability to pay for agricultural imports could be strained further, if the Soviets continue to push consumer and equipment imports. The USSR ran deficits in total ruble and nonsocialist trade in 1989, both firsts since 1976.

Soviet grain imports in 1990/91 (July/June) are projected to drop slightly from the estimated 1989/90 level. If State

grain purchases from Soviet farms decline further in 1990, import demand could be stronger. Despite a 16-million ton rise in total grain output in 1989, the share purchased by the State was the lowest in over 30 years. To stimulate sales, the State began to offer access to hard currency for some above-plan grain sales in August 1989 and increased ruble producer prices for grain in May 1990.

Livestock production in 1990 may increase by only about half as much as the 2.3 percent annual average of the last 5 years, due to continued feed quality problems, inefficiencies from worsening interregional and interbranch linkages, and the need to halt cattle inventory drawdowns. USSR dependence on oilseed and meal imports may not diminish in 1990/91 (October-September), even if total 1990 oilseed output surpasses 1989's record production. Soviet sugar imports may fall some in 1990, and imports from Cuba could also fall. Soviet cotton exports in 1990 may decline as the Soviets continue to cut cotton area.

The Government's Ryzhkov economic program, adopted in December 1989, relied on traditional administrative control to cut the deficit and shift resources from investment to consumption. The program postponed meaningful economic reform until 1993. Reflecting the conservative view that Soviet agriculture's problems are due to inadequate inputs, agriculture was given preferential treatment in the 1990 budget. While economywide investment is declining, investment in the agroindustrial complex is supposed to increase. Funds for retail food subsidies were increased because State retail food prices were not increased. Low retail food prices, continued high income growth, and a breakdown in interregional trade will worsen supply and demand imbalances in Soviet food markets. New laws on land, property, and leasing—adopted in late 1989 and early 1990—do not represent radical economic reforms.

However, the debate on more immediate, radical, economic reforms was reopened in March 1990. If the debate results in a program which truly relies on privatization, market prices, and an increased emphasis on efficiency-versus-equity considerations, the performance of the Soviet economy, including the agricultural sector, could eventually improve substantially. Soviet leaders would have a better basis for assessing the USSR's comparative advantages for producing crop, livestock, and nonagricultural products and the current goal of self-sufficiency for temperate-climate agricultural commodities. A reassessment, coupled with a genuine liberalization of Soviet agricultural trade policies and programs, could mean a vastly different business milieu for Western agricultural traders in the future.

Economic Problems Continue

Prospects for economic growth in the USSR in 1990 are clouded. Deepening dislocations and imbalances within the economy caused growth to slow throughout the course of 1989. The slowdown has continued in the first quarter of 1990, with gross national product (GNP) smaller than in the first quarter of 1989. Given the poor starting point and the failure to turn things in a positive direction in the first quarter of 1990, it is unlikely that economic growth will exceed that of 1989, which may have been nil or negative depending on the true scale of inflation.

A declining GNP may be an essential aspect of economic reform, because production of many goods in the USSR is wasteful and does not reflect consumer preferences. If production is becoming more responsive to consumer preferences, then a declining GNP may mask actual improvements in economic well-being.

In December 1989, the Government adopted the Ryzhkov program for economic stabilization and recovery. It relied heavily on traditional administrative control of resource allocation and postponed meaningful economic reform until 1993.¹ The crux of the program was a massive shift of resources from investment to consumption. In March, this program was suddenly scrapped and the debate on economic reform strategy was reopened. The debate has focused on questions of price reform, the banking and tax systems, methods for the State to dispose of its assets to cooperatives and other private interests, and development of an internal market for foreign exchange.

The shift in thinking on economic reform leaves policy for 1990 in limbo. This will mean slower real growth in consumer goods production than hoped. Despite cutbacks in the State investment budget, the large drain on resources into inefficient investment will continue this year. The Government relied in a limited way on larger imports of consumer goods in 1989 to improve market supplies. The proposal to greatly extend dependence on foreign credit (an additional \$5-\$10 billion per year) for the next few years to bolster supplies of consumer goods continues to be turned down by top policymakers.

Inflationary Trends

Inflationary trends in the Soviet economy continued to develop in 1989. Personal monetary income increased 4-6 times faster than labor productivity did. The State budget deficit increased to 92 billion rubles compared to 80.6 billion in 1988, and reached 10 percent of GNP (table 1). This deficit was financed primarily by money creation with direct inflationary impacts. Data on the size of the money

Table 1--State budget deficit and share of GNP, USSR

Year	Budget deficit	Share of GNP
	Billion rubles	Percent
1985	13.9	1.8
1986	45.5	5.7
1987	52.5	6.4
1988	80.6	9.2
1989	92.0	10.0
1990 plan	60.0	6.4

supply are not available, but it is known that money emission increased by nearly 60 percent compared with 1988, reaching 18 billion rubles. Policymakers had hoped to limit the increase to 10 billion rubles.²

According to the State Statistical Committee, consumer prices increased 2 percent in 1989. In addition, the official Soviet estimate of repressed inflation (calculated from growth in incomes and the official estimate of open inflation) grew by an additional 5.5 percent.³ The official consumer price index (CPI) fails to capture inflation disguised through product relabeling or reclassification (price increases more than commensurate with quality improvements). Capturing disguised inflation could boost the increase in the CPI to as much as 6-8 percent. The higher CPI would imply that the official Soviet estimate of repressed inflation is overstated.

The Soviet economy was plagued in 1989 by worsening interregional and intersectoral imbalances. With the economy in a transition phase between plan and market, neither mechanism is working effectively to maintain balance. Expansionary demand-side policies combined with disappointing supply-side improvements led to increasing shortages of consumer and industrial goods in 1989.

Enterprises and regions are reluctant to part with planned quantities of increasingly scarce commodities at State-set prices, particularly given the declining value of the ruble. Examples of growing friction in 1989 interregional trade are numerous. The Russian Republic has been reluctant to supply other republics with planned amounts of petroleum. Some southern republics halted exports of fruit and vegetables, while the Ukraine and Baltic republics have argued with Moscow about interregional price relations among mixed feed, grain, and livestock products (table 2). Worsening market shortages were a major factor in the increasing number of work stoppages in 1989, which, in turn, had a negative impact on growth rates—particularly in the second half of the year.

Table 2--Share of production and population by republic, USSR

Republic	Agriculture 1/	Crop	Livestock	Population
Percent				
USSR	100.0	100.0	100.0	100.0
RSFSR	46.7	41.6	50.5	51.4
Ukraine	22.1	23.2	21.4	18.0
Byelorussia	5.4	4.7	5.9	3.6
Moldavia	2.2	3.1	1.5	1.5
Lithuania	2.2	1.7	2.6	1.2
Latvia	1.3	0.9	1.7	0.9
Estonia	0.8	0.5	1.0	0.6
Georgia	1.5	2.4	0.8	1.9
Azerbaijan	1.7	2.6	1.1	2.4
Armenia	0.6	0.8	0.6	1.2
Kazakhstan	7.0	6.3	7.5	5.8
Uzbekistan	4.7	7.3	2.8	6.9
Kirgizia	1.3	1.3	1.3	1.5
Tadzhikistan	1.1	1.8	0.6	1.8
Turkmenistan	1.2	1.9	0.6	1.2

1/ Total of crop and livestock may not add due to rounding.

Economic Growth Slowed

According to official reports, economic growth in the USSR slowed in 1989, but remained positive. The rate of growth in GNP, net material product (national income produced), and gross output measures for the major economic sectors of industry, agriculture, and transportation, all declined (table 3). Because these figures

and services (due to distributional problems) are considered, it could be argued that the Soviet standard of living declined in 1989.

Inefficient use of investment resources has been an Achilles' heel for the economic reform effort under Gorbachev. Considerable resources continue to be poured into expanding the number and overall scale of new construction projects while unfinished construction grows. A negative real rate of interest and generally lax financial policies are major reasons for this wasteful use of investment capital.

The amount of newly commissioned fixed assets declined by 2 percent and the amount of newly commissioned housing fell by 3 percent in 1989. State plans call for a reduction in investment in 1990. With the budget deficit and the priority on consumption, this makes sense. The squeeze on investment resources will force leaders to prioritize construction activities, and possibly to mothball numerous projects now under way.

Virtually all expansion of industrial production was in consumer goods industries. Consumer goods production increased by a reported 7.6 percent from 1988, amounting to 426 billion rubles in 1989. If actual price increases were as high as 6-8 percent, then the real change in consumer goods production would be roughly 0-1.5 percent. Analysis of available commodity growth figures (expressed in physical terms) indicates smaller growth in consumer goods production than the official figure. Of the 30-billion ruble increase in consumer goods production officially reported, over 25 percent is attributable to higher production of alcoholic beverages.

Due to an 8-billion ruble increase in imports of consumer goods, retail trade increased by 37.3 billion rubles. The value of food commodities available at the retail level showed no increase compared to 1988, due to increased diversion to other distribution channels, primarily the workplace. The value of consumer services increased by 5 billion rubles, reaching 67 billion rubles in 1989. Consumer goods and services increased 42 billion rubles, compared to a 64-billion ruble increase in personal income.

More rapid expansion of demand, compared to supply, is evident in shortages of nearly all consumer goods in most regions of the USSR. Of 275 basic goods surveyed by the State Committee for Statistics, only 10 were readily available in the second half of 1989.⁵ Rationing of food commodities, in particular, increased in 1989. Deposits in savings accounts increased by 14 percent, reflecting further growth in excess demand. The amount of money held by the population (either in savings accounts or as cash) now exceeds the total annual value of retail commodity trade.

Table 3--Economic growth indicators, USSR

Category	1987	1988	1989
Percent			
Gross domestic product	2.9	5.5	3.0
Net material product (national income produced)	1.6	4.4	2.4
Industry	3.8	3.9	1.7
Consumer goods	4.1	5.4	4.8
Producer goods	3.7	3.4	0.7
Agriculture 1/ Transport 2/	-0.5	1.7	1.0
	2.0	1.3	-2.0

1/ Gross production. 2/ Volume of freight.
Source: *Narodnoe khozyaistvo v 1988* and *Sel'skaya zhizn'*, 1730/90.

are not corrected for disguised inflation, the Soviet economy may have experienced no real growth in 1989 or, as some Western analysts believe, actually declined.⁴ If the extra time and effort required to obtain desired goods

Strategy for Economic Stabilization and Recovery

The Government's strategy for improving economic performance is now undergoing a potentially significant transformation. In December, Prime Minister Ryzhkov announced a program for stabilization and recovery of the economy in 1990-95 calling for continued pursuit of basic policies in force in 1989, which included:

- reducing the State budget deficit,
- shifting resources from investment to consumption, and
- reducing increases in wage payments and the money supply.

The crux of the Ryzhkov strategy was a major restructuring of resource use in the economy in 1990-92. Unprecedented expansion in consumer goods and services, combined with a gradual slowing in demand growth, were to be the foundation for a truly reformed system. Traditional administrative controls were to be used in guiding this restructuring. By 1993, changes were to be prepared in the following areas:

- adoption of legislation on property, land, a unified tax system, republic economic autonomy, the enterprise, etc.
- reform of wholesale and retail prices.
- improvements in the system of finance and banking, and establishment of markets for capital.

The changes were to allow introduction of a market system—but one which retained a prominent role for Government planning and intervention. This program came under immediate attack from reform-minded economists in the USSR. They argued that continued reliance on the essentially failed policy of administratively controlled resource allocation was flawed, and that the program had no hope of achieving the targets for growth in consumer goods production and slowing increases in nominal income. They, like most Western analysts, believe postponing price, property rights, and other reforms will necessarily lead to further deterioration in the economic situation and make eventual reform more difficult.

Deputy Minister Abalkin now appears in charge of attempting to replace the Ryzhkov program with one oriented toward more rapid and radical economic reform. Attempts to formulate and approve a set of more radical policies for implementation in 1991 bogged down this spring. The most important stumbling block has been the question of price reform. Soviet policymakers remain reluctant to accept anything remotely approaching the

Polish shock therapy of freeing prices overnight. Many policymakers are standing firm against retail price increases for most goods, particularly food commodities. Other issues being discussed include foreign investment, the banking system, property rights, a new tax system, convertibility of the ruble, and social protection programs.

Replacement of the Ryzhkov program may prove to be the most significant development in Gorbachev's long-running reform effort. Not only are radical changes being potentially moved forward and given more attention, but the traditional reliance on administrative control and manipulation of the economy may be truly on the way out.

Potential midyear policy and program changes leave 1990 in limbo. The plan for 1990 was designed to be consistent with the orientation of the Ryzhkov program. The 35-percent reduction in the State budget deficit hinges on a planned 22-billion ruble investment reduction (table 4).

Table 4--Total investment, investment in the agricultural sector, and investment financed through State budget allocations, USSR

Category	1987	1988	1989	1/	1990
				billion rubles	2/
Total USSR investment	205.4	218.2	219.4	3/ 215	
Agroindustrial sector	63.2	67.2	67.0	4/ 70-73	
Agriculture	50.6	53.0	53.6	NA	
Related industries	12.6	14.2	13.4	NA	
State budget investment					
subsidies	81.5	87.1	74.6		53.0
Agroindustrial sector	16.2	16.9	14.0		13.3

NA = Not available. 1/ Preliminary data. In recent years final data have been a few percent higher. 2/ Projected. 3/ Government plans call for a reduction in investment, but because of greater enterprise autonomy a precise figure here is not possible. 4/ The Government plans a 5.8-billion ruble increase in 1990, compared with the 1989 plan, which is assumed to be equal to, or slightly less, than the preliminary 1989 actual figure.

A big reason for the runup in the State budget deficit since 1985 has been lack of growth in budget revenues. Between 1985 and 1988 revenues from turnover (sales) taxes stagnated because of lower vodka sales. Oil price declines on the world market also hurt Soviet revenues. Equally important, when introducing the new self-financing rules for State enterprises in 1988-89, the State cut tax rates for enterprises. The tax rate cut pumped funds into enterprises, insuring most could survive without introducing important efficiency improvements or facing bankruptcy.

State budget expenditures, on the other hand, accelerated after 1985. Expenditures for funding various sectors of the

economy (industry, agriculture, construction, etc.) and maintaining price subsidy programs grew by 34 billion rubles between 1985 and 1988.⁶ Expenditures for social and cultural measures (education, health, social security, etc.) increased by 26 billion rubles.⁷

The State is considering various means of raising budget revenues this year. Personal income tax rates for higher income brackets are expected to be raised, while overall inflation of personal incomes also will insure higher revenues. The State is also considering a heavier tax on enterprises' "super" profits and has introduced a tax on excessive growth in enterprise wage expenditures. Increases in retail commodity sales, including those of alcoholic beverages, will result in higher turnover tax revenues this year. Other revenue enhancing ideas include the sale of State assets (apartments, dacha plots, and some factories and production capital) and Government bonds.

The Government hopes to cover the entire projected budget deficit of 60 billion rubles through domestic borrowing rather than money creation. Long-term bonds, with a 5-percent rate of return and redeemable between 1996 and 2006, are to be offered for sale this year. However, there may be little willingness to purchase the bonds, given the drastic reduction projected in State budget financing of investment, potentially more stringent enterprise profit tax conditions, continued large amounts of uncompleted construction, and the likelihood of higher rates of return on shorter term investments in the near future.

Expenditures from the State budget are expected to be about the same as in 1989. Reductions in financing the national economy, particularly direct funding of investment, are necessary because of the commitment to increase social spending.

The magnitude of projected shifts in resource flows in 1990 under the Ryzhkov program is unprecedented. If the 30-percent reduction in State budget funding of investment is realized, overall investment in the economy will almost certainly decline. The now discredited plan calls for an incredible 66-billion ruble (15 percent) increase in the production of consumer goods this year, nearly 4 times the annual average increase for 1986-89. This was to be achieved by a major restructuring of machine-building and defense industries toward consumer goods. With only a 4.2-percent growth in output in the machine-building industry, production of consumer goods is planned to increase by more than 30 percent. Output of consumer goods by defense industry factories is planned to increase by at least 35 percent. The increase is to be achieved through partial or complete conversion of half of defense industry enterprises. How such a significant restructuring and retooling of enterprises can be achieved in such a short period of time, especially given tightening investment constraints, is clearly open to question.

Cooperatives Expand

Cooperatives accounted for 4.4 percent of gross domestic product in 1989, up from about 1 percent in 1988. Employment in the cooperative sector reached 4.9 million by the beginning of 1990, up from 1.4 million a year earlier. This rapid expansion occurred despite continued administrative constraints on cooperative activity. A major problem has been securing necessary inputs. Because of low, administratively set prices for intermediate and final goods in the State sector, cooperatives are in a position to make tremendous profits by securing resources from the State and selling output at uncontrolled prices. The State has attempted to limit these possibilities by controlling cooperatives' access to material inputs and the prices cooperatives can charge their customers.

Public opinion has run strongly against the cooperatives on the issue of price. One survey found that fully 91 percent of Soviet citizens felt cooperative prices were too high.⁸ However, the majority felt that many types of cooperatives deserved further development (particularly in construction, agriculture, and consumer services), areas that experienced the greatest development within the cooperative sector during 1989. The number of construction cooperatives increased by ten fold and accounted for 30 percent of total cooperative sector output. Information processing and research cooperatives increased four-fold—accounting for 8 percent of all cooperatives' output.

Food catering, health care, and trade cooperatives all had big gains in 1988, but showed little or no growth in 1989. These did not have majority support in the opinion survey cited above. Given the sensitivity on the issue of price, it may be reasonable to expect continued development of cooperatives which provide goods and services to other enterprises rather than those dealing directly with the population. Support for development of retail trade cooperatives is not likely until the glaring price distortions within the Soviet economy are addressed.

All of these targets appear to be clearly out of reach. Actual performance is expected to fall far below these goals, underscoring the need for more radical economic policies. Given the likelihood of only modest increases in availability of food commodities (which account for about half of all retail consumer trade) in 1990, attainment of the planned 15-percent increase in consumer goods production will necessarily include a substantial degree of disguised inflation.

Restrained growth in demand hinges on the ability to control the money supply. Reduction in the State budget deficit and, more importantly, changes in the way in which it is financed are crucial. Effective control of the money supply has been hampered by enterprises' lack of financial discipline. Funding of investment and wage payments has traditionally been covered, when necessary, by bank credits with extremely lenient terms. There is some indication that credit terms are being tightened this year.⁹

The Government has also introduced taxes to punish enterprises for increases in excess of 3 percent in their wage fund payments.¹⁰ Exceptions to this tax have been established for priority industries, which may set the stage for further negotiations among enterprises, the Ministry of Finance, and the Council of Ministers. Plans call for a 9-10 percent growth in personal money incomes this year, compared with 12.9 percent in 1989.

Between Plan and Market

Movement toward more radical thinking in economic policy in the Soviet Union occurs as most East European countries are moving further toward full-fledged privatization of their economies. Gorbachev has spoken of a mixed planned market system which incorporates the best features of market and planned economies. What this system would be, or whether Soviet specialists have a conceptually sound foundation for building it, is open to question.

President Gorbachev has focused his reform effort for a number of years on strengthening incentives and improving flexibility within the economy. Thus far, the track record on both points has not been good. One problem has been the reluctance to address the issue of efficiency-equity

tradeoffs. Pro-efficiency reform continues to be thwarted by equity considerations, as evidenced by the introduction of self-financing in 1988-89. The hope, clearly, is that necessary systemic and structural changes need not entail a large social cost. The Government has been committed to improving (or at least maintaining) living standards while reforms are in progress. The expansion of Government social spending since 1985 contributed to the budget deficit. Equity considerations have also been central in clamping down on the activity of cooperatives in 1989.

Because of an unwillingness to incur social costs, the Government has continually postponed price reform and has failed to make real improvements in the banking and credit system. The environment for economic reform has continued to deteriorate during this time. Rejection of the Ryzhkov program indicates an unwillingness to maintain this approach.

Without efficiently functioning markets, there is no alternative to the traditional administrative means of economic control. The Government's new program will have to address this fact. Will the Government program contain the necessary elements to allow a market system to begin functioning? A definitive answer to this question clearly is not now possible.

Some things that need to be resolved are how free and controlled prices would coexist, how much the State will divest itself of productive assets, what private property rights will be extended, what type of safety net will the State provide for those hurt by structural adjustments, how to improve the banking and tax systems (including establishment of an independent central bank), and what sacrifices the population will accept for the sake of economic reform. *[Edward C. Cook]*

Half Measures in Agricultural Reform

Emerging policy developments in the agricultural sector indicate an unwillingness to make substantial breaks from the largely failed approaches of the past. Since the fall of 1989, new legislation has been adopted in the USSR on leasing, land, and property. On paper these new laws offer opportunities for efficiency improvements in the countryside. But they lack support in a systemwide strategy of reform and are expected to exert only limited influence (in the next year or two at least) on how agriculture functions. The basic strategy of the Government still relies on increased resource flows into agriculture, with little attention given to incentives for improving quality and use of resources.

Problems in the livestock sector are expected to keep agricultural growth below the long-term rate of 2-2.5 percent this year. Feed supplies entering this year were only slightly higher than the year before. Substantial growth in crop production, which accounts for 45 percent of gross agricultural production, will be needed for overall growth to exceed the long-term average. Because of problems with input supplies and the limited immediate impact of new policy changes, this is not anticipated. Given continued strong expansionary policies on the demand side, the situation in food markets is expected to deteriorate further during the course of the year, adding friction to the overall economic reform effort.

During 1987-89, gross agricultural production grew by just 0.7 percent per year, less than the growth in population. This underscores the need to revitalize growth in the early 1990's to prevent the situation in food markets from further deterioration.

Equity-Efficiency Tradeoffs

Agriculture has been singled out for special treatment in the Government program for 1990. While economywide investment is declining, possibly down 5 percent or more compared with 1989, investment in the agroindustrial complex will be increasing by 5-10 percent. The burden placed on the State budget by Government-financed investment in the agroindustrial complex will continue undiminished in 1990. The basic tenet of the Government strategy in agriculture and the food economy is continued emphasis on increasing the capital base for production, processing, and distribution. Farms will also receive more ready access to credit in 1990 to help them weather current financial problems.¹¹ Overall subsidies to the agroindustrial complex will increase further in 1990 (table 5). Most of this increase results from higher producer prices combined with relatively little increase in State-set consumer prices.

Table 5--Subsidies to the agroindustrial sector, USSR

Category	1987	1989	1990
Billion rubles			
Total	98.8	108.5	116.5
Retail price subsidies	54.0	55.1	61.9
Differentiated farm price bonuses	10.9	32.2	33.1
Input subsidies 1/	5.8	--	--
Capital investment	16.2	14.0	13.3
Miscellaneous expenditures	11.9	7.5	8.2

1/ For fertilizers and machinery. Data on subsidies for other inputs not available.

Source: Semenov, V., "Khозрасчет и самофинансирование," *APK: Экономика, управление*, No. 3, 1989, p. 12, and *Izvestiya*, 9/27/89.

Reliance on more investment, without proper attention to the efficiency of its use, was the bane of the Brezhnev-era growth strategy. The basic logic of the 1982 Food Program was to provide inefficient or financially troubled State and collective farms with the resources necessary to pull themselves up to an average level of performance. The primary policy tools were highly differentiated procurement prices and utterly lax credit policies (debt write-off and postponement, and negative real rates of interest). Although the Soviets broadly recognize the disincentives that resulted from the equity-oriented policies, policymakers remain reluctant to draw clear conclusions about equity-efficiency tradeoffs in agriculture.

The reasons for this reluctance are clear. First, agriculture is in deep financial trouble as a result of ill-founded investment and other financial policies introduced since the mid-1960's.¹² Efficiency reforms in agriculture would likely result in holding farms responsible for mistakes caused by poor Government policies and programs. Second, because Soviet policy has fostered a broad range of farms with high costs and low productivity, the shakeout resulting from a shift to efficiency criteria could be severe—with short-run declines in agricultural production and domestic food supplies probable.

The social implications of shifting low-productivity labor out of agriculture, without employment options in the rural economy or elsewhere, are also important. Support of private and cooperative activity in the countryside could provide the stimulation needed by the rural economy to overcome this problem, much as it did in China in the early 1980's.

Reluctance to tamper with traditional equity guarantees, combined with lack of reforms in the rest of the economy,

Agricultural Cooperatives

Since 1989, peasant associations have sprung up in some USSR republics, including the Baltics and the RSFSR. Their goal is to represent the interests of peasant farms (now numbering over 10,000) and agricultural cooperatives (established since the 1988 cooperatives law). These associations aim to develop private and cooperative activity in agriculture—*independent* of State and collective farms.

The scale of such activity is quite limited now. Some proponents of peasant associations call for helping interested farm workers exit collective farms with their share of land and productive assets. Many prominent economists and agricultural economists in the USSR call for restructuring financially failing State and collective farms into small private farms. For small-scale private agriculture in the USSR to avoid the pitfalls of private agriculture in Poland, adequate up- and down-stream support from the rest of the economy is essential. Producer and trade cooperatives could provide such support.

Soviet agricultural cooperatives remain underdeveloped. Traditional consumer food cooperatives (Tsentrosoyuz) primarily purchase agricultural commodities produced on the household plots of State and collective farm workers. These cooperatives are dominated by State administrators

and have tremendous need for new investment in infrastructure.¹³ October 1989 regulations forbid cooperatives from purchasing food commodities from the State retail and Tsentrosoyuz networks, if the cooperatives intend to resell the goods. Furthermore, the trade cooperatives' prices for "essential goods" (most likely including food) can be limited by local governments.¹⁴

A primary reason for restrictions on purchasing and trade cooperatives is the distorted pricing structure in agriculture (between regions and among various stages of the marketing chain) which makes large profits from arbitrage readily available. A bill in the USSR Supreme Soviet to ban purchasing and trade cooperatives outright fell just a few votes short of approval. Still, the Krasnodar Kray Soviet, despite the clear contradiction with the cooperative laws and pressure from the State Prosecutor, refuses to retract its total ban on them.¹⁵

Agricultural production cooperatives (mostly for livestock fattening and high value crops) have fared better. Their number quadrupled during 1989, reaching 8,400 at the beginning of 1990. Little is known about the nature of these production cooperatives and their relationship with the State bureaucracy.

has stalled efforts to reform the price formation system in agriculture. Changes in procurement (farm-gate) prices, which were scheduled for introduction in the beginning of the year, have been postponed until next year or later. New procurement prices were to be based on marginal rather than average costs, and the number of price zones was to be greatly reduced.

New Legislative Initiatives

The past year has witnessed a flurry of legislative activity relevant to agriculture in the newly constituted Supreme Soviet. In the fall of 1989, a new leasing law was passed. In March, legislation was passed on land and property rights. Work continues on developing legislation for a unified tax system.

Taken as a whole, the new legislation aims to improve the way Soviet agriculture operates by strengthening accountability and incentives and limiting the administrative apparatus' ability to interfere in farm management and finances. Achieving these goals entails greatly relaxing central control over food production and supply, reducing the practice of income levelling among farms and farmworkers, and placing the economic future of a large num-

ber of State and collective farms in jeopardy. The legislation on leasing, land, and property is supposed to open the door for largely independent, small-scale, family agriculture. The risks involved are likely to limit interest to only a small percentage of farmworkers. Experience with leasing in Soviet agriculture reinforces this conclusion.

The program for leasing land and other assets in agriculture was introduced in 1987. State and collective farms were given the role of lessor for the land they controlled, virtually all available agricultural land. Thus, they have played a prominent role in the leasing program. State and collective farms, in most cases, subvert the lessees' interests to demands of the administrative apparatus. This is particularly true in regards to delivery targets.¹⁶ The Government hoped leasing would heighten labor incentives and productivity, and improve economic health for the most financially troubled State and collective farms. However, managers on these farms viewed leasing as a potential constraint on their authority. A further problem with the leasing program has been the lack of adequate machinery and support services for small-scale agriculture, another potential area for cooperative activity in the countryside.

Because of Government prodding, lease arrangements have been established on a sizeable minority of State and collec-

tive farms. The Government recently announced that farms will be relieved of their outstanding debt (in many cases sizeable) to the extent they introduce leasing arrangements.¹⁷ But many leases are simply renamed versions of old collective contract teams, which are larger in scale than household agriculture and traditionally suffer a lack of autonomy. Polls indicate that only a small minority (5–20 percent) of lease contracts were initiated by the lessees. The rest are initiated by farm management.¹⁸ The leasing law, passed in the fall of 1989, did not provide a basis for breaking the unilateral control over lessees held by the State and collective farms. Thus, leasing is no longer the focus of reform-minded Soviet agricultural economists.

Reformers are now focusing on household agriculture. The laws on land and property increase local control over land ("land belongs to the people in a given territory") and other resources and allow for lifelong, inheritable possession of land by individuals or families.¹⁹ The land law also allows collective farm members to exit the collective with their share of the collective's land and other assets, if they so desire. But, as was the case with the leasing law, the laws on land and property do not aim to infringe on the dominance of State and collective farms in the Soviet countryside. While policymakers speak of the need for ensuring equal development opportunities for all acceptable types of farms, including private household farms, State and collective farms maintain full operation rights to their land. Therefore, the pool of land available for distribution to individuals will be small and probably limited to the lowest quality and least accessible lands.

The land law does *not* allow the sale of land. By not allowing markets for land to develop, the law perpetuates flawed land valuation, and there is no effective mechanism for ensuring that land goes to the most productive users. Establishment of private household agriculture will be hindered by the lack of necessary machinery and support services from the rest of the economy, as well as by fear of an eventual policy reversal against private agriculture. Furthermore, the land law does not provide a realistic mechanism for collective farm workers to exit their farms on fair terms.²⁰

Thus far, establishment of independent household farms has been limited primarily to the Baltic republics. A recent opinion poll commissioned by the Supreme Soviet Presidium found that most Soviet economists felt private farms would account for no more than 5–10 percent of arable land by 1995.²¹

Although the recent agricultural legislation is aimed at facilitating structural and management change, barriers to change remain intact. The operation of State and collective farms, which dominate Soviet agriculture, remains virtually untouched by the new legislation. For structural change to



be accomplished, real incentives are needed to increase efficiency—rewarding productive farms and holding inefficient farms economically responsible for their performance.

Demand for Food Commodities Surging

Production of food products increased by 3.2 percent in 1989, but due to the diversion of supplies to secondary marketing channels (including direct diversion to enterprises and organizations), the State retail network received the same amount of food products as in 1988. With the growth in personal monetary income and limitations on price increases in the State retail food network, demand for food products grew substantially in 1989. This resulted in a worsening of the food market situation, particularly in State stores. Prices on farmers' markets, which are free to respond to supply and demand, increased by 7 percent in 1989 compared to 1988. However, January 1990 prices were 13 percent higher than prices in January 1989. This increase reflected income-driven demand, as supplies of food on farmers' markets increased over this period.²²

These trends are expected to continue through 1990 at least. Plans call for a growth in production of food commodities of an incredible 7.6 percent.²³ Given prospects for agricultural production, attainment of this goal is highly unlikely. Real increases in food supplies probably will not exceed 3–4 percent in 1990, and growth for livestock products is expected to be less than this.

The Government hopes to limit increases in personal monetary income to less than 10 percent in 1990. Monetary incomes increased 14 percent in the first quarter of 1990, even more rapidly than in 1989. Even if income growth could be slowed to 10 percent for the year, postponement in retail food price increases will likely increase excess demand for food, particularly for livestock products. *(Edward C. Cook)*

Input Supply and Effectiveness

The conservatives assert that the primary reason Soviet agricultural production and productivity lags Western standards is "poor technical equipping of the agroindustrial complex and the social disarray in the Soviet village" rather than the fact agriculture is socialized.²⁴ Ligachev argued that Soviet farms are equipped at the level U.S. farms were at the beginning of the 1950's, that Soviet farms obtain the grain yields that the United States did then, and that U.S farms now are equipped 4.5 times better.

Others point out that, although fixed productive capital in the agroindustrial complex increased more than two-fold from 1975 to 1987, output increased only a third, and the output/capital ratio fell about 45 percent.²⁵ At the same time, production costs increased. During 1980-88, capital availability per worker increased by 71 percent, but labor productivity went up only 30 percent.²⁶ The Soviet machine-building industry allocates more than 30 percent of its total output to the agroindustrial complex; the energy producing industry, 28 percent; metallurgy, about 32 percent; chemical, 32.5 percent; and construction industry, 35 percent.²⁷ Yet, according to the Soviets, 70 percent of all agricultural operations still are performed manually.²⁸

Why does the agroindustrial sector, having received about a third of the Nation's total investment during 1970-85—and 30 percent since then, remain so poorly supplied and inefficient? A number of Soviet analysts blame the "destruction of the peasant." "Only the independent peasant is capable of using investments in agriculture economically and productively and providing a rapid return."²⁹ Other more balanced assessments include the following reasons.

- The structure of investment was faulty, with too much going to large-scale construction and land reclamation projects and too little for developing more reliable equipment and retooling. Too many projects were undertaken at the same time, part of the reason for excessive completion times. With exasperation, the Soviets complain of a sugar refinery near Voronezh, under construction for more than 10 years, with the end of the work nowhere in sight.
- With administratively set prices, increases in input prices far outstripped any improved effectiveness. Furthermore, the method of setting prices, based on the material intensiveness of production, resulted in heavy, power-intensive machines, such as tractors that waste fuel, as well as decrease yields through soil compaction. In the past several years, complaints about parity of input versus crop and livestock product prices have grown for several reasons. Changes in the price system

have allowed suppliers to raise prices greatly, while the suppliers' monopoly status has allowed them to cut production of lower priced inputs. Pressure to increase farm profitability has made farms more cost conscious. Subsidies for most fertilizer and machinery inputs were removed in 1988 and 1989. Wholesale trade—which was to help increase competition, hold down prices, and improve quality—remains largely undeveloped.

- Inadequate quantity and quality of variable inputs (such as seeds, fertilizers, and feed), acceptance of poor quality goods into enlarged storage capacities, and slowness in adopting modern agronomic and animal husbandry methods have also limited total output and productivity of capital. Input deficiencies in one area cut the productivity of all inputs. During 1970-87, although fertilizer use increased 2.7 times and pesticide use 2.4 times, agricultural output increased 1.2 times. Mechanized agriculture requires developing crop varieties suitable for mechanical harvesting. Only 10 percent, of the Soviets 800 varieties of vegetable cultures, even partially meet the requirements for mechanized harvesting and processing. The quantity and quality of provisions are not the only issues. Timing is also key. A telling example, a 46-percent shortage in January 1990 deliveries of plastic sheeting reportedly greatly reduced the supply of early vegetables.

Conservatives seem to have more weight at present. The new land and property laws still limit options for increased personal initiative and responsibility. And the 1990 budget, which calls for cutting overall State centralized capital investment by 30 percent, cuts State centralized investment in the agroindustrial complex little.

Conservatives continue to argue for more resources in the midterm, complaining that the more than 25-percent increase in food output planned for 1995 is not reasonable, because total agroindustrial complex investment is projected to increase only 19 percent. Capital investment in large building and land reclamation projects in 1991-95 is being cut substantially from 1986-90. But expenditures for rural social facilities and agricultural processing will be up 1.5 times, and rural road building will increase 2.8 fold to 26.4 billion rubles.³⁰ During 1991-95 deliveries of tractors, trucks, and agricultural machines are supposed to increase 24 percent, and processing equipment, by as much as two and a half fold.

Labor productivity on State and collective farms reportedly increased 5 percent in 1989. Agricultural employment in the socialized sector was about 22.4 million at the beginning of 1989. Agricultural employment fell 700,000

in the socialized sector, while total agricultural output was up 1 percent. Some of the increase in socialist labor productivity could reflect counting the output of some private producers (operating under contract to State and collective farms) as output of the socialized sector.

Concentration on Processing Equipment

Tractor and combine deliveries declined for 4 consecutive years (table 6). Deliveries of tractors in 1989 were the lowest since 1968 and of grain combines since 1961. Deliveries have fallen, in part, because buyers reacted to the program to increase economic accountability by rejecting billions of rubles worth of equipment (much of it substandard) from the Industry for Automotive and Agricultural Machine Building.

Tractors, combines, and other agricultural equipment spend more time in repair shops than in the fields.³¹ In 1989, 15–20 percent of the tractors and trucks in agriculture were out-of-service.³² The standard life span of Soviet tractors is only 8 to 10 years; according to the Soviets this is at least one and a half times less than in the United States. About 300,000 tractors are written off annually, 25 percent of them before the expiration of the standard life cycle.

Problems with on- and off-farm transportation of agricultural products worsened this year. The Soviets reported that 1.5 million tons of gasoline and 0.6 million tons of diesel exports were foregone in the third quarter of 1989 and instead transferred to domestic agricultural use. Still, deliveries of fuels and lubricants to agriculture apparently were curtailed, which hampered the harvest. Officials say that gasoline supplies for agriculture will remain stable in 1990.

Table 6--Tractors, grain combines, and trucks: Inventories, deliveries, and scrapping rates, USSR 1/

Year	Tractors			Grain combines			Trucks		
	Inven-tories	Deliv-eries	Scrapping rate 2/	Inven-tories	Deliv-eries	Scrapping rate 2/	Inven-tories	Deliv-eries	Scrapping rate 2/
	Thousands	Percent		Thousands	Percent		Thousands	Percent	
1966-70 average	1,821	293	12.6	578	94	13.8	1,105	133	NA
1971-75 average	2,189	333	12.3	661	90	12.3	1,282	220	13.6
1976-80 average	2,495	361	12.9	701	108	14.3	1,527	268	15.4
1981-85 average	2,695	370	12.3	791	112	11.6	3/ 1,692	3/ 274	3/ 13.9
1986	2,776	394	14.2	827	111	13.6	4/ 1,348	317	22.3
1987	NA	354	NA	NA	93	NA	1,350	330	24.3
1988	2,692	340	NA	751	66	NA	1,354	354	25.9
1989	NA	5/ 300	NA	NA	NA	NA	NA	NA	NA

NA = Not available. 1/ Inventories are for the end of the year. 2/ Equal to deliveries, minus change in inventories, divided by inventories at the end of the preceding year. 3/ Average for 1981-83 from Soviet sources. No data were given for 1984. In 1988, the *Narodnoe khozyaistvo v 1987* gave inventories of 1,327,000 for 1987. Thus, the implied scrapping rate for 1984-85 is 58 percent, as the large stock of nonfunctional trucks was written off inventories. 4/ The 1987 *Narodnoe khozyaistvo za 70 let* (p. 207) reported inventories of 1,917,000, but the 1988 *Narodnoe khozyaistvo v 1987* (p. 166) reported 1,348,000. 5/ *Izvestiya*, 1/28/90.

The plan calls for investing 77 billion rubles in the food processing industry in 1988-95. The aim for processing equipment deliveries is 4 billion rubles in 1990, and 7.5 billion rubles in 1995. The goal for total 1988-95 deliveries is 37 billion rubles, more than the combined amount during the preceding 40 years. Capital investment in the food processing industry in 1989 was 5.5 billion rubles, 92 percent of the goal and 8 percent of all investment allocated for the agroindustrial complex. Out of a planned 236 agricultural enterprises and facilities, only 108 became operational in 1989. In the 1985-90 period (most likely in the latter part), 8.23 billion rubles (about \$13 billion) was spent for imported food processing equipment.³³

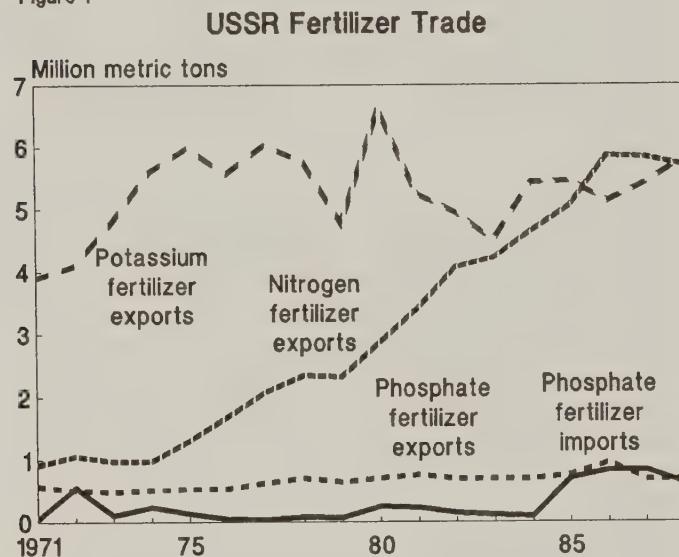
The defense industries have major responsibility for upgrading output of food processing facilities by providing better equipment. By 1995 the defense industry is expected to supply up to 47 percent of the total value of food processing equipment.³⁴ The problems of adapting the defense industries' equipment and technologies and retraining their personnel to produce food processing equipment will significantly raise equipment costs.

Will the investment in additional processing equipment yield better results than previously? Fixed productive capital in the food processing sector rose 1.9 times from 1975-87, yet output rose only 40 percent. Post harvest losses of agricultural products remain high. Losses of potatoes, fruits, and vegetables are 30-40 percent. Less than 20 percent of vegetables, and 2 percent of potatoes, are processed. Although annual potato and vegetable production is about 100 million tons, storage capacity is 22 million tons.

Less Agrochemicals

Production and deliveries of mineral fertilizer and plant protectant to farms in 1990 could well be down again, but will not necessarily cut crop output. Mineral fertilizer and pesticide imports in 1989 were down over 20 percent in value terms from 1988 (fig. 1). Mineral fertilizer output

Figure 1



in 1989 was down 8 percent from 1988 (table 7). Deliveries of mineral fertilizers to farms were 11 percent less (the lowest since 1985), due to lower domestic production and imports. The elimination of fertilizer subsidies during 1988 and 1989 roughly doubled the prices farms pay.

The shift of some livestock production from massive central feeding operations to farms is a possibility as farms retain more grain and the central authorities have trouble supplying the large feedlots. A positive by-product of such a move could be an increase in farm supplies of organic fertilizers. According to the Soviets, they apply an average of 4.2 tons of organic fertilizer per hectare, which they contrast to U.S. use of 15.3 tons.

No data on domestic production or deliveries of plant protectants are available for 1989. The area treated was over 192 million hectares, about 14 percent below the goal. Production and deliveries of plant protectants in 1988 decreased 10 percent and 15 percent compared to 1987. Imports were down 9 percent.

Farms taking cost accounting most seriously and rejecting high-priced, poor quality inputs, may be helping to rationalize agrochemical use. The head of the pesticides department of the State Agrochemical Association said cost accounting led to more efficient use of lower volumes of chemical pesticides. Declines involved primarily ineffective formulas, some of which now are banned.

Table 7--Mineral fertilizer production and deliveries to agriculture, USSR

Year	Total 1/	Nitrogen	Phosphate	Potash
1,000 metric tons 2/				
Production				
Average for				
1966-70	10,379	4,210	2,985	3,177
1971-75	17,877	7,248	4,483	6,138
1976-80	23,328	9,283	6,128	7,910
1981-85	29,294	12,573	7,521	9,192
1986	34,737	15,200	9,328	10,200
1987	36,300	15,700	9,691	10,900
1988	37,100	15,800	10,000	11,300
1989	34,300	NA	NA	NA
Deliveries				
Average for				
1966-70	8,452	3,520	2,704	2,221
1971-75	13,802	6,209	3,882	3,703
1976-80	18,063	7,632	5,287	5,137
1981-85	22,156	9,790	6,540	5,817
1986	26,514	11,475	8,354	6,677
1987	27,412	11,787	8,564	7,052
1988	27,196	11,587	8,556	7,044
1989	24,100	NA	NA	NA

1/ Includes also trace elements. 2/ Nutrient weight basis. Nitrogen--20.5 percent N, phosphates--18.7 percent P₂O₅ and ground phosphate rock--19 percent P₂O₅, and potash--41.6 percent K₂O.

Lower chemical application rates were possible due to improved biological controls (used on 24 million hectares in 1988) and improved application techniques and equipment.³⁵ Still, according to the Soviets, about 50 percent of pesticide treatments are technologically unsatisfactory, due in part to a lack of granulated formulations, sprayers, and mixing units.

The newly reorganized State Agrochemical Association faces increased challenges in supplying agrochemicals. The environmental lobby in the USSR, aided by increased local autonomy, are stopping development of some agrochemical and microbiological plants. An initiative curtailing production of protein and vitamin concentrates was rejected by the legislature only after a commission pointed out the losses it could cause in the livestock sector, which is already short in feed proteins.³⁶ As a result of ecological disasters in the Soviet countryside, chemical treatment has been canceled and biological controls are being used on 10 million hectares.³⁷ Efforts to increase production of phosphorus fertilizers may also be affected.

Land Improvement

The amount of newly irrigated and drained land brought into production has decreased for several years. In 1990, it could well continue to decrease, as investment funds declined 10 percent in 1988 and likely more in 1989. The investment decline in 1989 was to decrease land

improvement's share of total capital investment to 15 percent, from 17 percent in 1988.³⁸ Compared to 1987, 1988's irrigated land commissioned dropped 27 percent and drained lands commissioned decreased 4 percent. Data for 1989 are not available (table 8).

Table 8--Irrigated and drained land, USSR

Year	Irrigated		Drained	
	Yearend	Commissioned	Yearend	Commissioned
Million hectares				
1970	11.1	.396	10.2	.815
1975	14.5	1.180	13.7	.982
1980	17.5	.650	16.9	.648
1981	18.0	.643	17.0	.696
1982	18.6	.637	17.5	.685
1983	19.1	.714	18.1	.728
1984	19.5	.676	18.6	.691
1985	20.0	.642	19.1	.693
1986	20.5	.614	19.5	.700
1987	20.5	.549	19.4	.633
1988	20.8	.403	19.8	.610
1989	NA	NA	NA	NA

With the decline in investment in land reclamation, the focus of the Ministry of Water Construction (which replaced the Ministry of Land Reclamation and Water

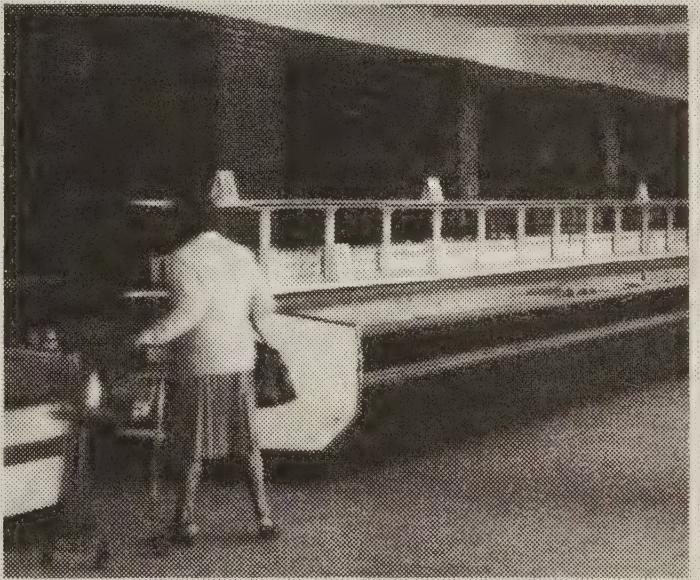
Resources in 1989) must be on improving present systems. Soviet figures illustrate the need for improvement. On 15 percent of the farms irrigating grain, the yields are less than 1.5 tons per hectare. This yield is 15–30 percent less than what might be expected on irrigated land in California, depending on whether output is small grains or corn. Soviet yields on irrigated land were less than 7.5 tons per hectare on a fourth of farms growing potatoes and on a third of the farms producing vegetables. California yields are 40-plus tons per hectare.

To encourage more careful water use, all farms are scheduled to begin paying for water in 1991, an average of 0.04 rubles per cubic meter.³⁹ Agriculture claims 150–200 kilometers³ of surface and ground waters annually (55–60 percent of the country's water consumption). About 60 percent of farmland is irrigated by surface methods, and only 28 percent of the total length of irrigation systems is enclosed. According to one source, over 40 percent of irrigation water is lost to infiltration and evaporation.⁴⁰ Water use exceeds the high, archaic norms two to three times. Poor distribution facilities, inadequate drainage systems, and over application of water have caused swamping and soil salinization. Salinated land area increased 65 percent since 1980. Three million hectares of irrigated land were removed from production in the last 25 years due to secondary salinization.⁴¹

Undervaluing Traders

Undervaluing the services provided by traders is reflected in the dismal state of Soviet retail and wholesale trade. The State is making slow progress in improving trade and is still generally relying on administrative measures rather than development of market incentives. For example, although the original cooperative law allowed intermediary trading, amendments greatly limit trading cooperatives' sources of supply and prices. According to the Deputy Minister of Foreign Economic Relations, whether the participant is the producer or "a trader"—who will try to make unjustifiably high profits from price difference—is considered in issuing export and import licenses.⁴²

In the Russian Republic's agroindustrial complex (which produces 46 percent of Soviet agricultural output) less than 25 percent of 1989 agricultural inputs were supplied through arrangements that even approximated wholesale trade.⁴³ The target for 1990 is 40 percent, but quoting the Deputy Minister "... for many more years ... oblast, kray, and republic agroproms ... will act as ... middlemen" between industrial enterprises and farms.



Small Farms Provision

To remedy deficiencies in input supply and productivity, the Soviets ultimately will have to allow competition among suppliers, market-determined prices, and redistribution of resources from unprofitable farms and enterprises. Unless these problems are resolved, a shift from State and collective to private farms will continue to result in inadequately provisioned, inefficient farms.

Smaller farms are disadvantaged in bidding for resources and in repairing and retooling inferior equipment. Larger farms now fabricate spare parts. One study states that only 10 percent of the 830,000 small tractor orders were filled in 1988. Small tractor demand will grow if more smaller fields result from leasing and individual farms. Production is supposed to triple to 280,000–300,000 in the early 1990's.⁴⁴ In the United States there are now over 4 million small tractors, although most are used for nonagricultural purposes.

One Soviet analyst estimates that equipment for household plots and emerging individual farms cannot be met before 2000.⁴⁵ The expense of equipping small farms is one argument used to defend large State and collective farms.

Some Soviet analysts and lawmakers understand the causes of low productivity of agricultural inputs in the USSR. Solutions extend beyond agricultural reform to needed changes in the overall Soviet economic system. In the first half of 1990, the Soviet Government remained reluctant to make the widespread systemic changes necessary to close the gap between the USSR's input quality and productivity and the West's. The "more versus better" lobby remains strong. A late 1989 proposal to shift an additional 10 percent of funds allocated to industrial enterprises to the agroindustrial complex was defeated by only 1 vote.⁴⁶

[Yuri Markish and Kathryn Zeimetz]

USSR Agricultural Trade in the 1990's

Overall Soviet agricultural import requirements could fall somewhat in 1990 from 1989 (table 9). Imports could

Table 9--Agricultural imports, 1989, USSR, by value 1/

Commodity	1987	1988	1989 2/
	\$ Millions		
Grain and products	2,686	4,109	5,200
Sugar	4,841	4,573	4,500
Livestock and products 3/	2,504	2,642	2,575
Fruits, vegetables, and nuts	1,652	1,829	1,700
Coffee, tea, cocoa, and beverages	1,240	1,070	1,450
Tobacco and products	932	910	900
Oilseeds and oilmeal 2/	958	1,129	1,300
Fats and oils	449	393	720
Cotton	137	170	135
Other	316	373	420
Total	15,715	17,198	18,700

1/ Derived from USSR official data converted at \$1.42 for 1986 and \$1.58 for 1987. 2/ Estimates based on data in *Ekonomika i zhizn'*, No. 15 (1990), pp. 3-4, and using an exchange rate of \$1.65 for 1988. 3/ Includes furs, raw hides, wool, and animal fats including butter.

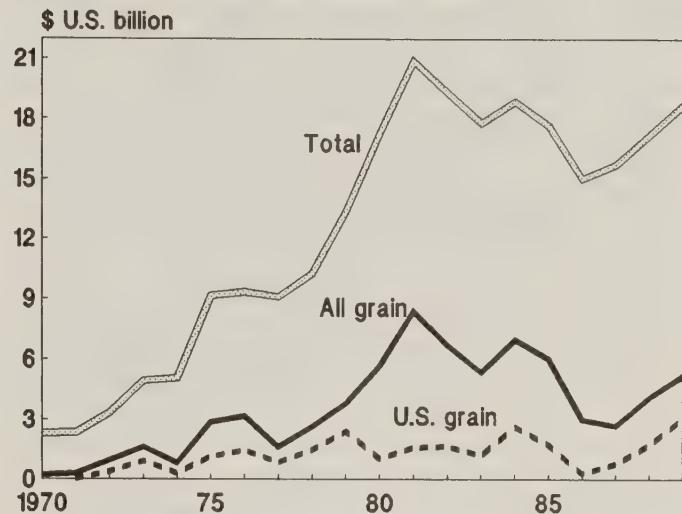
remain high through the mid-1990's even if partial reform somewhat raises Soviet agricultural production and productivity. Delays in price and monetary reforms could widen supply and demand imbalances in the domestic food economy. However, limited export earnings could restrain agricultural imports.

If a new reform program is developed which truly relies on the market, rather than administrative control, and is quickly implemented, the structure and performance of the Soviet overall and agricultural economies could greatly improve during the 1990's. The USSR leaders would have a better basis for assessing the country's comparative advantages for producing crop, livestock, and nonagricultural products and its current goal of self-sufficiency for temperate-climate agricultural commodities. A reassessment, coupled with a genuine liberalization of Soviet agricultural trade policies and programs, could mean a vastly different business milieu for Western agricultural traders by the end of the decade—possibly with the USSR as a net wheat exporter.

Lamenting agricultural imports, which averaged almost \$18 billion annually in the 1980's, has become one of the most popular press topics in the USSR (fig. 2). The accessibility of imports is widely blamed for permitting the stagnation in Soviet agriculture. However, others argue that agricultural imports per se are not the problem, citing

Figure 2

USSR Agricultural Imports



the high U.S. agricultural import bill. They criticize the structure of Soviet agricultural imports, complaining about excessive temperate-climate imports and insufficient warm-climate purchases.

Some say that total grain imports can be cut by: substituting coarse grain production in the soft wheat producing area in Moldavia, the Ukraine, southern areas of the Russian Republic, and the Non Black Soil Zone; specializing in production of hard wheat varieties in the areas of the Volga, Kazakhstan, Altai, and other regions; improving domestic feed production; and increasing imports of soybeans and soybean meal.⁴⁷

That the USSR should be at least self-sufficient in quality wheat production, and even an important exporter of quality wheat, is a widely held view. Some suggest that, at least until the USSR improves livestock feeding efficiency, it should import meat rather than feedstuffs. Still, others suggest exporting higher priced sunflowerseed oil and better cuts of meat and importing lower cost oils and meats.⁴⁸ Western analysts have offered many of these same suggestions regarding appropriate Soviet agricultural trade strategies.

Price and Currency Reform

Developing an economically rational trade strategy (and domestic food policy) for the USSR, based on the principles of comparative advantage (exporting goods that are relatively inexpensive to produce and importing those which are relatively expensive to produce), is hampered by internal price distortions caused by administratively set prices and the inconvertibility of the ruble. Soviet and Western analysts are handicapped in understanding Soviet

comparative advantages and forecasting likely trade flows if Soviet domestic prices were established by a market and linked to world prices with a convertible currency.

Soviet economists and many political leaders accept the need for price reform and ruble convertibility. But the potentially highly disruptive, short-term effects of price and currency reforms have continually delayed widespread, basic changes. Only beginning steps have been taken. For prices, this has mostly involved minor relaxation of central control. In agriculture, this has primarily affected input costs and farm and retail prices of fruits and vegetables.

The price system and lack of ruble convertibility have resulted in anomalies and irregularities in Soviet foreign and domestic trade and decreased gains from trade for the USSR. These problems have caused the continued use of State foreign trade organizations (FTO's) for the bulk of trade including energy, grain, oilseeds and products, livestock products, sugar, and cotton. Furthermore, oversight of Soviet enterprises (most of which had only been given the right to trade internationally in 1989) has been increased. A registration fee must be paid to the Government and licenses are required for export and import of many commodities.

The Government affects enterprises' interests in exports through control of export revenues. The 1986 reform allowed enterprises to retain a share of hard currency earnings. Retention rates range from as high as 80-90 percent for favored machinery enterprises to as low as 2 percent for others. With few Soviet exports involving machinery, the State retains control of most hard currency earnings. The Government reallocates the retained hard currency to finance food and other imports.

The State affects the ruble earnings of firms through a set of highly differentiated (by commodity and producer) exchange rates. The Government uses perhaps 2,000-4,000 exchange rates when settling with domestic enterprises. This practice further complicates efforts to measure comparative advantage across industries and enterprises. In 1991, the Government's wants to establish a single, realistic exchange rate for each convertible currency for settling accounts with Soviet enterprises in order to eliminate these distortions.⁴⁹

As an intermediate step, beginning in January 1990, the Soviets were to apply a 100 percent bonus to the official exchange rate (in effect devaluing the ruble by half) in settling accounts with Soviet enterprises. However, the devaluation may have been delayed until 1991. In general, a devaluation should make exports more attractive. The effect of making imports more expensive would be greater for enterprises which finance their own imports, rather than for national FTO's and enterprises receiving allocated

funds. Since most Soviet trade is either denominated in hard currency or under barter arrangement, the devaluation will have little effect on international prices.

The tourist exchange rate was devalued from 1 ruble per \$1.60 to 1 ruble per \$0.16 on November 1, 1989, in an effort to compete with the black market. The first hard currency auction on November 3, 1989 suggested that the ruble was overvalued 15 times. This rate, while in line with the black-market rates, is likely too high, inflated by the thin market. However, the third auction in February 1990 did not lower the rate.

The USSR preempted East European countries' call for intrabloc trade reform by calling for trade among socialist countries by 1991 to be based on current world prices with payments in convertible currencies, discontinuing the current practice of using the 5-year moving average of world trade prices in barter agreements. The Soviets already use current world prices and settle trade in hard currency with some socialist countries. The First Deputy Prime Minister said the Council for Mutual Economic Assistance (CMEA) would not be destabilized by a transfer to convertible currencies and world prices in its commercial settlements. "This (destabilization) could happen if the present approaches are preserved. Soviet settlements in hard currency with such countries as Yugoslavia and China testify to the opposite."⁵⁰

Denominating CMEA trade transactions in current world prices and convertible currencies could increase the competitive position of the West for meat and temperate-climate fruit and vegetable exports to the USSR. The East Europeans have been predominant USSR suppliers for these commodities. Several factors may limit the benefits to the West. Greater hard-currency requirements for meat, fruit, and vegetables could cut the traditional allocation of hard currency for grain and oilseeds. Furthermore, in the short- to mid-term, Eastern Europe and the USSR will remain closely tied in trade. Extensive pipeline connections will lead to continued Soviet energy exports to Eastern Europe. Technological ties, long-term agreements, and shortages of quality goods to sell to the West (to earn hard currency to pay for Soviet energy), will keep East European and other bloc countries exporting substantial amounts of goods, including farm commodities, to the USSR.

Agricultural Imports in the 1990's

The draft 1990 plan lamented the shortcomings of importing grain and feed, but still provided for increased borrowing in 1990 to finance increased grain and foodstuff imports.⁵¹ However, Soviet agricultural imports could fall in 1990 unless severe problems develop in the 1990 domestic crop output and in interregional trade. Somewhat

Table 10--Agricultural imports, USSR, by value

Commodity	1986	1987	1988
	\$ Millions 1/		
Wheat	1,765.0	1,547.4	2,401.6
Barley	253.9	166.2	224.2
Corn	835.5	741.5	1,266.1
Other grain	10.6	3.8	7.5
Sorghum	3.2	3.8	5.7
Wheat flour	36.2	35.2	31.3
Rice, milled	87.6	188.5	172.2
Subtotal	2,992.0	2,686.5	4,108.6
Animals for slaughter	86.8	112.1	125.8
Breeding animals	24.9	24.8	23.4
Meat and meat products	1,287.2	1,387.6	1,208.0
Milk and milk products	115.1	103.7	107.7
Eggs and egg products	21.1	12.6	13.1
Animal fats including			
butter	147.3	212.8	333.7
Wool	458.6	641.9	823.3
Furs	2.9	3.6	2.7
Raw hides	1.8	4.7	4.6
Vegetables and potatoes	590.7	607.8	735.8
Fruit and berries, fresh	570.2	464.1	483.6
Fruit, dried	98.5	124.5	101.3
Fruit and berries, processed	307.3	280.7	321.3
Nuts	144.2	175.4	186.5
Sugar, raw	4,614.0	4,833.7	4,539.4
Sugar, refined	6.3	7.7	33.4
Coffee, cocoa, tea	859.2	846.9	700.2
Spices	85.6	89.8	83.3
Beverages	485.8	392.8	369.6
Tobacco, raw	240.8	236.1	224.8
Tobacco products	657.2	695.5	685.7
Natural fibers	151.1	166.3	201.2
Oilseeds	477.2	384.3	312.6
Oilseed meal 2/	73.1	573.5	816.8
Tapioca	19.3	0	45.5
Vegetable oils	194.1	303.4	210.2
Technical fats and oils	132.2	145.5	182.5
Seeds and planting materials	176.3	196.9	213.0
Total	15,021.0	15,715.2	17,197.7

1/ USSR official data converted at \$1.42 in 1986, \$1.58 in 1987, and \$1.65 in 1988. 2/ Estimates.

lower grain imports and prices, and lower sugar imports and less high priced Cuban sugar, might offset higher meat and vegetable oil imports (tables 10 and 11). Grain and sugar generally account for about half of the Soviet agricultural imports.

Imports in 1989 approached, and may have exceeded, 1984's bill, but remained below 1981's record \$21 billion. About two-thirds of the 1989 increase was likely due to higher quantities and prices of grain imports. The value of raw sugar imports fell, despite an almost 25-percent increase in import quantity. Vegetable oil imports were up substantially, as were imports of some tropical products such as coffee and tea.

The Soviets' ability to pay for agricultural imports in 1990 could be more strained if they continue to push consumer

goods and equipment imports. Imports in ruble value from all sources increased 11 percent in 1989 and exports about 2.5 percent, resulting in the first negative balance of trade since 1976.⁵² The USSR also ran its first trade deficit with the West (industrialized and developing) since 1976. In 1988, it had a \$4.2-billion surplus, in 1987, an \$8.4-billion surplus (table 12). The \$1.3 billion trade deficit with the West increased Soviet hard currency debt, causing increased lending margins. In 1989, Soviet exports to the West were record, helped by higher energy prices that also improved the Soviets grain-oil terms of trade (fig. 3).

Imports from the West were \$42.3 billion, up \$13 billion since 1987. Perhaps \$1 billion, of the \$6.5-billion increase in 1989, were due to a higher grain import bill. The rest was caused by much higher imports of other consumer goods (sold for high domestic prices) and continuing imports of capital goods.

Although the Soviet hard currency commodity balance deteriorated dramatically in 1989, Western analysts believe the USSR remains in a good financial situation. Gold sales may play a more important role, as they probably did in 1989, in financing hard currency imports.⁵³ Analysts
1/ assumption: i.e. raw sugar @ 40¢/lb.

Table 11--Agricultural imports, quantities of principal items, USSR

Commodity	1986	1987	1988
	1,000 metric tons		
Wheat	15,700	18,097	21,180
Barley	3,613	3,020	2,365
Corn	7,236	9,238	11,426
Other grain	208	30	71
Sorghum	39	58	58
Wheat flour 1/	271	304	237
Rice, milled	363	598	498
Subtotal	27,430	31,345	35,835
Meat and meat products 2/	936	858	719
Shell eggs 3/	387	196	168
Butter	194	403	440
Wool, scoured	115	134	114
Vegetables, fresh	271	254	203
Vegetables, canned	464	422	447
Fruit, fresh	1,269	926	969
Fruit, dried	91	81	64
Sugar, raw	5,158	5,035	4,094
Sugar, refined	23	20	127
Coffee	39	58	49
Cocoa beans	163	148	139
Tea	110	135	133
Tobacco	67	54	49
Cotton lint	88	75	90
Tapioca	297	0	772
Oilseeds	2,062	1,927	1,397
Oilseed meal 4/	375	3,300	3,300
Vegetable oil, edible	451	825	367

1/ Flour in wheat equivalent at 72 percent. 2/ Does not include live animals. 3/ Million pieces. 4/ ERS estimate.

USSR Interest in GATT

Soviet efforts to reform their price and exchange rate system are only one means of linking their economies more directly to the world economy. "We plan a more purposeful participation in international economic organizations. This mainly concerns the USSR's rapprochement with GATT (in the final count, bearing in mind our full participation in this Agreement), conclusion of a blanket agreement on trade and cooperation with the European Community (EC), establishment of working contacts with the European Free Trade Association, the Organization for Economic Cooperation and Development, the International Monetary Fund, and the International Bank for Reconstruction and Development."⁵⁴

The granting of mutual most-favored-nation (MFN) status in the December 1989 EC-USSR trade pact is not that significant since the individual countries had already extended MFN status to each other. The EC pledge to abandon most of its quotas on imports from the USSR by 1995 is more significant.

In anticipation of cooperation with or membership in with these organizations, the Soviets have been revising their commodity nomenclature and custom tariffs codes. However, the tariffs rates will continue to be of little importance as long as central authorities control most foreign currency allocation and have substantial trade licensing requirements and quotas.

The importance to the USSR of the GATT negotiations for agricultural subsidies has not gone unnoticed by either the West or the USSR. The USSR, as a major net agricultural importer, has benefitted from the West's subsidized agricultural exports and has large agricultural subsidies for its farmers and consumers. One Soviet economist notes that: "...we are dependent...on the results of the talks of the GATT participants...on questions of eliminating subsidies on deliveries of agricultural commodities."⁵⁵

suggest the Soviets can continue to run a hard currency commodity trade deficit of about \$4 billion annually without dipping into their enormous gold reserves.

Soviet overall food supplies are calorically ample (though inadequate in variety, quality, and convenience) despite land and animal productivities for some commodities that are a third to a half less than many Western countries and some East European countries. Poor transport, processing,

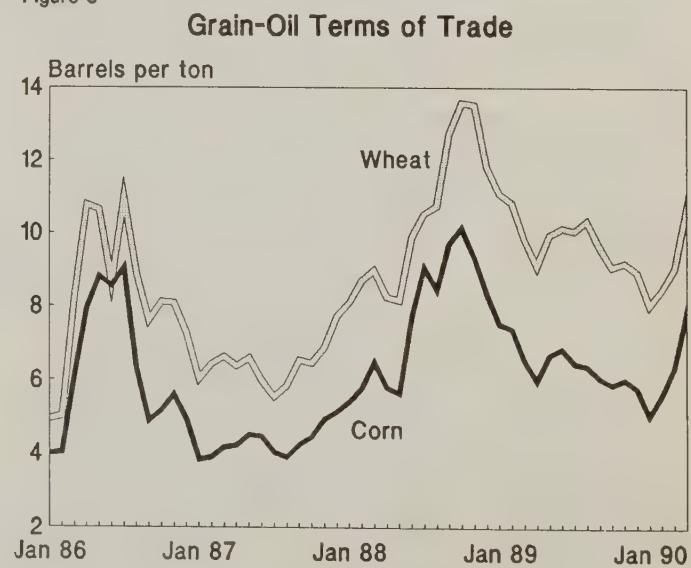
and marketing facilities further decrease the efficiency of the USSR's food economy. Throughout the 1990's, if Soviet agricultural and general economic reforms are effective, they could substantially improve agricultural performance and food markets. However, implementing reforms and rectifying inconsistencies will take time, and the full potential of Soviet agricultural resources likely will remain unrealized in the midterm.

Table 12--Foreign trade, USSR

Direction	1987	1988	1989
Billion rubles 1/			
Exports to:	68.1	67.1	68.8
Socialist countries 2/	44.2	42.9	42.3
Western industrialized countries	14.2	14.7	16.4
Developing countries	9.8	9.6	10.1
Imports from:	60.7	65.0	72.1
Socialist countries 2/	42.1	43.4	44.6
Western industrialized countries	13.9	16.3	20.5
Developing countries	4.7	5.3	7.0

1/ In the USSR official exchange rate, a ruble equaled \$1.58 in 1987, \$1.65 in 1988, and \$1.58 in 1989. 2/ Includes Eastern Europe, Cuba, Mongolia, North Korea, PRC, and Vietnam.

Figure 3



A key question is to what extent the leadership will use agricultural imports to supplement domestic supplies. Soviet meat consumption is now close to Sweden's in quantity, if not quality. The USSR's wish to retain a high degree of food self-sufficiency, combined with continuing constraints on export earnings and Government control of food imports, will limit agricultural imports. Increases of quality exportable goods and services will not be enough to supplement traditional energy, gold, and arms earnings to meet the demand for imported food, other consumer goods, capital goods, and technology.

Analysts say near and midterm Soviet oil exports could fall due to domestic production problems. Production is expected to fall in 1990 as it did in 1989. Problems with coal and nuclear power production will raise domestic requirements for oil. Gold sales, at the level necessary to cover 1989's hard currency commodity trade deficit, are about the same as recent annual production.

When forced to make mid- to long-term projections about Soviet agricultural imports, Economic Research Service's analysts' base scenario suggests that the Soviets will be able to improve the quality of their wheat and decrease the need for food wheat imports. But the signing of new grain agreements suggests that they still anticipate sizable wheat imports through the mid-1990's. They should increase feed grain imports as they produce less feed-quality wheat. Because the livestock sector is not likely to end its domestic protein feed shortage by the end of the decade, the USSR should increase soybean and soybean meal imports. *[Kathryn Zeimetz]*

Joint Ventures in Farming

Since 1986, the Soviets have enacted and revised legislation to encourage foreign investment in the USSR as a way to modernize its economy. Only a small percentage of the 1,300 joint ventures registered with Western partners are actually functioning.

A number of the joint ventures registered involve food processing. Some interesting joint farming ventures are also reportedly underway or being discussed. One grandiose project concerns joint management with an Italian firm of 500,000 hectares in Stavropol Kray, the prime farming area from which Gorbachev hails. The Dutch are involved in a farming operation near Moscow; one report discussed 25,000 hectares to start and another discussed establishing 100-family farms. The Illinois Department of Agriculture and a number of U.S. agricultural firms are also discussing proposals to help equip and manage Soviet farms and processing facilities.

Modeling Soviet Agricultural Trade Liberalization

The movement for economic reform within the Soviet Union has coincided with the negotiations among the GATT countries to liberalize world trade, with attention on agriculture. These two developments lead to the questions: (1) how would liberalization of agricultural trade by the GATT countries affect the USSR, and (2) how might the liberalization of Soviet agricultural trade affect the world and individual country markets for major farm commodities? The Static World Policy Simulation Model (SWOPSIM) of world agricultural trade, with a USSR component, has been developed at ERS specifically to estimate the effects of various scenarios for agricultural trade liberalization.⁵⁶

The following liberalization scenarios are examined: (1) the industrialized market economies (IME's) alone liberalize trade; (2) the USSR alone liberalizes; and (3) both the IME's and the USSR liberalize. Complete trade liberalization is defined as the elimination of all support to producers and consumers of agricultural goods, and total acceptance of world prices as the sole determinant of domestic market-clearing prices for producers and consumers. Thus liberalization scenarios 2 and 3 assume that the USSR fundamentally reforms its economy by moving to an open and price-driven market economy. The model estimates changes in the production, consumption, and trade in agricultural goods.⁵⁷

The Soviet benefit from trade liberalization is the increase in economic efficiency that results from more strongly integrating the domestic economy into the world economy. For example, if the Soviet domestic price for an agricultural good exceeds the world price (when compared using an acceptable shadow exchange rate), the USSR has a comparative disadvantage in the good. The Soviets will raise their economic efficiency by producing less of the good domestically, importing more, and using the resources saved to specialize in the production of goods for which they have a comparative advantage (domestic prices lower than world prices). Efficiency gains from liberalization result from changes in the structure of trade and consumption, as well as production.

The benefit of increased economic efficiency that results from changes in the mix of goods produced and traded can be distinguished from the benefit of increased technical efficiency—the result of higher productivity. A total reform package, of which trade liberalization is a part, also could generate improvements in technical efficiency. Liberalization scenarios 2 and 3 assume a reasonable degree of Soviet agricultural productivity gains.

Because of the many conceptual and empirical difficulties in modeling agricultural liberalization for the USSR, the

results cannot serve as precise estimates, but rather as indicators of general magnitude. The estimates suggest that liberalization by the IME's alone would have only a small effect on the volume of Soviet agricultural imports. (By raising import prices, IME liberalization would, nonetheless, hurt the Soviets, an issue discussed later.) If, however, the USSR liberalizes alone, meat imports could more than double, while grain imports could fall. The main reason for these changes is that liberalization should reduce domestic production of meat and consumption of grain. If both the IME's and USSR liberalize, meat imports should again rise, though by less than if the USSR liberalized alone. Grain imports, though, should fall by even more. The reason is that the isolated effect of IME liberalization would be to increase Soviet import prices for meat and grain, and thereby depress imports.

Description of the Model

SWOPSIM is a static, partial equilibrium model (since only agricultural markets are included), though it has the merit that world agricultural trade must balance. The model can incorporate 22 commodities and 36 countries or regions. Producers and consumers are represented by supply and demand curves, (which, in turn, are represented by elasticities). SWOPSIM equations are constant elasticity supply and demand equations that use synthetic own and cross price elasticities.

The model assumes that a country's net trade equals the difference between the domestic quantity demanded and supplied of a good at the existing domestic price. However, the existence of extreme disequilibrium (excess demand) in Soviet food markets necessitates dropping the assumption that, for the USSR, trade balances domestic markets. Rather, market disequilibrium is incorporated into the model, with estimates of excess demand for meat and other foodstuffs. All SWOPSIM results are based on the assumption that liberalization occurs in 1986. Although the model is static, rather than dynamic, the solution is understood to be an equilibrium requiring a number of years of adjustment to be reached.

Within SWOPSIM, governments liberalize trade by reducing or removing producer and consumer subsidies and taxes (under which conventional tariffs and quotas are subsumed). In Soviet reform scenarios, liberalization technically involves eliminating producer and consumer subsidies, as well as shifting the demand curves to account for the release of suppressed excess demand.⁵⁸ Also, in the scenarios involving complete Soviet reform, the supply curves shift to account for productivity increases resulting from effective reform. Although agricultural privatization

need not be an essential condition for productivity improvements, greater decentralization of agricultural decisionmaking power, to some degree, would be a likely ingredient.

Producer and Consumer Subsidy Equivalents

The main way producers and consumers are subsidized or taxed is by receiving or paying prices different from world market prices. The extent to which Soviet domestic agricultural markets deviate from world markets is measured using producer and consumer subsidy equivalents (PSE's and CSE's).

PSE's measure the difference between the value of resources devoted to production of a given commodity (on a per ton basis) and the relevant import price for that good. The value of resources expended in a commodity's production equals the producer price plus producer subsidies in the form of policy transfers. CSE's measure the difference between the relevant import price and the domestic consumer price. Deviations between the Soviet domestic markets and world markets for agricultural commodities are maintained through the inconvertibility of the ruble and a system of State Foreign Trade Organizations, which have virtually complete authority over trade of commodities under their responsibility.

Information necessary for calculating PSE's and CSE's came from a number of Soviet sources.⁵⁹ Data were available for average farm-gate prices, marketing margins between the farm gate and retail outlets, retail consumer prices, and budgetary allocations for major direct policy transfers to producers (primarily Government-subsidized investment and input subsidies). Marketing margin information was used to insure comparability of domestic producer and consumer prices with relevant import prices. (Farm-gate prices were supplemented by appropriate processing and transportation costs to make the domestic commodity comparable with the imported commodity. Likewise, retail consumer prices were reduced by relevant processing and marketing costs.)

Import prices used in calculating PSE's and CSE's should be free trade prices which the domestic country faces. In reality, exporter subsidies frequently had an influence on observed Soviet import prices. In estimating import prices for the Soviet PSE's/CSE's, average unit trade values were used for crop commodities. For livestock products, average producer prices in key exporting countries were the basis for calculating relevant import prices.

To convert import prices into domestic rubles, a shadow exchange rate between the dollar and the ruble was calculated. The general approach was to determine a relationship between a ruble's worth of resources in the

USSR and a dollar's worth of resources (embodied in traded goods) on the world market. The estimated marginal cost of producing a set of agricultural commodities in the USSR, in rubles, was compared to the import price for those commodities in dollars. The shadow exchange rate used in the model is 1.91 rubles to the dollar, which compares with the Soviet official (and artificial) exchange rate for 1986 of 0.7 rubles to the dollar.

Substantial State budget allocations are devoted to supporting agriculture in the USSR, either through the retail price subsidies or through direct policy transfers to producers. In 1986 nearly one-quarter of the State budget, or roughly 12 percent of gross domestic product, was used for these purposes. The estimated PSE's and CSE's reflect this subsidy effort. The aggregate PSE (the ratio of total subsidies to producers divided by the value of production), for the 15 commodities analyzed, equalled 26 percent for 1986. The aggregate CSE (the ratio of total subsidies to consumers divided by the cost of consumed commodities) equalled 34 percent.

Commodities for which producers received the largest degree of support *vis-à-vis* world prices were beef, poultry, sugar, rice, and butter. Soviet producers were taxed, relative to world prices, only on wheat and sunflowerseed. Soviet consumers were most heavily subsidized for beef, dairy products, and wheat. They were taxed, relative to world prices, only for sunflowerseed (because of a high retail price for sunflowerseed oil), sugar, and poultry.

The domestic variables in Soviet PSE/CSE calculations have tended to be stable from year to year. Many consumer retail prices have shown little growth since the 1960's. Farm-gate prices and the size of direct policy transfers to producers have generally increased at a steady rate over time. The primary source of variability in year-to-year values for Soviet PSE's/CSE's are the calculated import prices. The higher the import price, the larger the share of the domestic subsidy wedge attributed to consumers, and vice versa.

Since 1986, two factors have probably increased the share of subsidies going to consumers in the USSR. First, world prices for wheat and coarse grains increased substantially, but Soviet consumers were insulated from these increases. Second, the real value of the domestic ruble, with respect to Western currencies, continued to fall, thereby raising relevant ruble import prices. Data for calculating Soviet PSE's/CSE's beyond 1986 are not yet available.

Of the countries thus far studied, the USSR is the only one which simultaneously subsidizes consumers and producers to such a great extent.⁶⁰ The shock of eliminating such large subsidies, which alignment with world prices entails,

would be substantial. Some prices in the State retail network might have to double or triple to eliminate consumer subsidies.

The estimated PSE's/CSE's for 1986 were incorporated into a SWOPSIM model to simulate the impact of an elimination of Government intervention in Soviet agricultural markets on world prices and trade flows.

Results

Aggregate results will be examined for meat and grain. As mentioned previously, many conceptual and empirical difficulties exist in modeling Soviet agricultural liberalization (such as flawed and incomplete domestic cost and price data, market disequilibrium, and the need to estimate a shadow exchange rate). Thus, the results best serve as indicators of general magnitude. The predicted direction of change in a value is often as important as the specific estimate. For this reason, discussion of the results will be in general terms.

Of the three scenarios examined, the most important, in terms of isolating the effect of Soviet behavior, is the one in which the USSR alone liberalizes (scenario 2). Liberalization has both upward and downward effects on domestic production. The upward effect results from the assumption that major agricultural reform, of which trade liberalization is only one part, increases agricultural productivity, and thus output (as represented by outward shifts in supply curves). The downward effect results from the fact that, before liberalization, domestic producers of most of these products are subsidized by receiving domestic prices above world market prices. Under liberalization, the fall in domestic prices to world levels lowers producer prices, and thus domestic production (as represented by movement along supply curves). For meat and grain, in aggregate, the downward effect dominates the upward, and thus, production falls with liberalization.

Liberalization also involves an upward and downward effect for consumption. The upward effect of liberalization results because the Soviets allow domestic markets to equilibrate. Satisfying previously unmet excess demand raises consumption (for the model, rightward shifts in demand curves). Yet, before liberalization, Soviet consumers of almost all foodstuffs are subsidized by

paying prices below world levels. The rise in prices to world values dampens consumption.

For meat, the upward effect exceeds the downward, though only slightly. The downward effect, however, dominates for grain (though feed relationships independent of these two effects also influence consumption).

Because production of meat falls and consumption rises, Soviet meat imports are estimated to more than double to over 2 million tons. Production of grain also decreases, though the drop in consumption is even greater. Consequently, grain imports fall, perhaps by a half. So, the main effect of liberalization appears to be that the Soviets would substitute imports of meat for those of grain.

The main effect of liberalization by the IME's would be to raise world prices. The IME's presently have extensive programs to support domestic agricultural production, which result in excess output. Much of the surplus is put on the world market, thereby depressing prices. Thus, IME trade liberalization would increase world prices by reducing supply on the world market. The effect on the USSR would be a rise in prices for producers and consumers. If, however, the USSR does not also liberalize, then only a small amount of the increase in world prices would be transmitted to the Soviet domestic economy. Thus, in scenario 1, in which the IME's liberalize alone, imports of meat and grain change little, though grain imports fall somewhat.

If, however, both the IME's and USSR liberalize (scenario 3), then all of the increase in import prices would be transmitted to the Soviet economy. Production would grow and consumption fall, thereby lowering imports of meat and grain by more than negligible amounts.

The main objective of the United States in the current GATT negotiations has been to liberalize world agricultural trade. In March, the Soviet leadership began preparing plans for radical market-oriented reforms. However, in late April, they appeared to weaken again in their resolve to make major changes in the near future. If either the IME's or the USSR do liberalize, the SWOPSIM framework can be a tool to evaluate how Soviet agricultural trade could change. *[William M. Liefert and Edward C. Cook]*

U.S.-USSR Trade

U.S. exports to the USSR could fall somewhat from 1989's record, in part because of lower commodity prices. In 1989, the United States exported \$3.6 billion of agricultural exports to the USSR, making the USSR second only to Japan as a market for U.S. farm exports (table 13). The

Table 13--U.S. agricultural exports to the USSR 1/

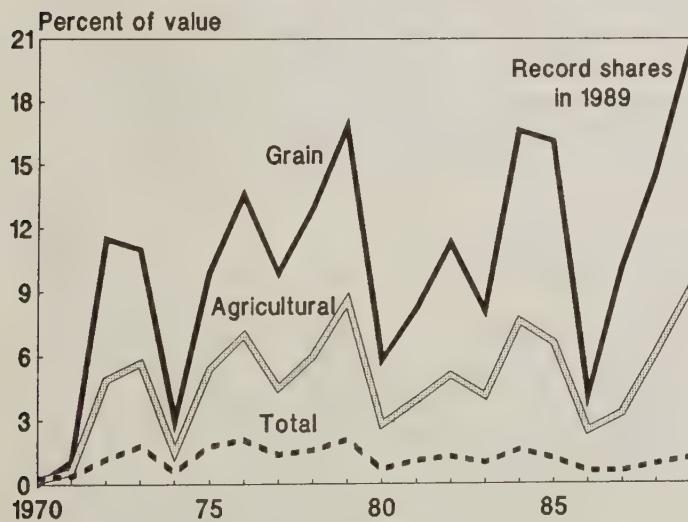
Commodity	1987	1988	1989
\$ Millions			
Wheat	392.5	755.1	827.1
Corn	393.2	961.8	2,135.4
Soybeans	42.7	169.3	82.3
Soybean meal	57.5	246.3	382.6
Fruit, nuts, and berries	27.4	46.8	19.5
Cotton	--	31.0	--
Tallow, inedible	18.8	26.4	26.0
All other	6.0	15.4	113.2
Total	938.1	2,252.1	3,586.1
1,000 metric tons			
Wheat	4,847.2	8,035.9	5,342.7
Corn	5,319.9	8,521.7	18,566.1
Soybeans	221.3	777.6	296.6
Soybean meal	270.9	1,122.0	1,417.9
Almonds, shelled	7.6	15.7	7.2
Cotton, excluding linters	--	21.8	--
Tallow, inedible	54.9	65.0	77.3

-- = None or negligible.

1/ Includes transshipments through Canada.

USSR accounted for 9 percent of U.S. agricultural exports, bettering its 1979 record market share (fig. 4). On a volume basis, it took a record 23 percent of U.S. grain exports, led by corn's 33 percent. The United States is

Figure 4
USSR Share of U.S. Exports

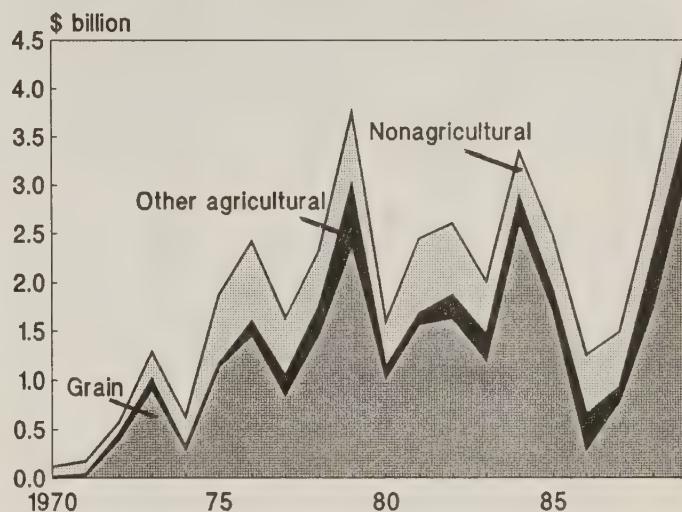


expanding into new product areas with major sales of chicken legs and butter.

During the 1980's, the United States shipped the USSR over \$18 billion of agricultural products, accounting for three-quarters of total U.S. exports to the USSR. About 85 percent of this was grain with almost another 10 percent in soybeans and soybean meal (fig. 5).

Figure 5

U.S. Exports to the USSR



Some people hold out the hope for much higher agricultural exports to the USSR in the 1990's because of improving U.S.-Soviet relations which could include a new overall trade agreement, waiver of the Jackson-Vanik amendment of the 1974 Trade Act, investment and tax agreements, and a new long-term grain agreement.

The United States and the USSR are negotiating on the terms of a third long-term grain agreement. The countries are also drafting overall trade and investment agreements in preparation for President Bush asking Congress to waive the Jackson-Vanik amendment. The waiver would make the USSR eligible for MFN treatment for its exports to the United States and remove the prohibition on Soviet access to USDA agricultural export credit programs.

U.S.-USSR Trade with MFN

Granting MFN status to the USSR would substantially lower tariff barriers to Soviet exports to the United States. A recent econometric study for the International Trade Commission, which acknowledged that its estimates were much above other studies, suggests that granting MFN status to the USSR could mean an overall welfare gain to the United States of perhaps \$1 billion, and a smaller gain

to the USSR. Other analyses suggest that the gain would be smaller.⁶¹ Typically about half of U.S. imports from the USSR have been commodities that enter duty free, primarily precious metals and compounds, anhydrous ammonia, artwork, sable skins, and tractors (table 14). The

Table 14--U.S. trade with the USSR

Year	U.S. exports		U.S. imports	
	Total	Agricultural	Total	Agricultural
\$ Millions				
1972 1/	572	459	88	4
1973 1/	1,287	1,017	204	5
1974 1/	631	324	335	9
1975 1/	1,871	1,170	243	7
1976 1/	2,424	1,605	214	8
1977 1/	1,637	1,053	221	11
1978 1/	2,328	1,765	529	12
1979 2/	3,749	3,000	873	15
1980 2/	1,601	1,138	432	10
1981 2/	2,450	1,685	357	12
1982 2/	2,605	1,871	229	11
1983 2/	2,002	1,473	341	10
1984 2/	3,343	2,878	556	11
1985 2/	2,460	1,923	407	9
1986 2/	1,257	658	557	17
1987 2/	1,492	938	408	22
1988 2/	2,849	2,246	564	19
1989 2/	4,412	3,586	691	20

1/ Total and agricultural exports adjusted for grain and oilseed transshipments through Canada, West Germany, Belgium, and the Netherlands. 2/ Total and agricultural exports adjusted for grain and oilseed transshipments through Canada.

structure of Soviet exports to Canada, which already grants the USSR MFN, does not differ much from Soviet exports to the United States.

The limited ability of the USSR to increase exports of many commodities most affected by tariff declines will restrict increases in USSR export earnings. Well over half of its exports are oil and gas, arms, ores, and base metals. MFN status would cut the U.S. tariffs on USSR energy exports to the United States by 50–75 percent. However, the USSR energy sector has difficulty maintaining commitments to Western Europe and other importing countries where little or no discriminatory tariffs now exist.

The quality of Soviet manufactured and processed exports and post-sales servicing are generally not competitive with Western standards, and the primary destinations of such goods are generally centrally planned or developing countries. Soviet domestic and trade reforms will only slowly upgrade the quality of Soviet manufactures.

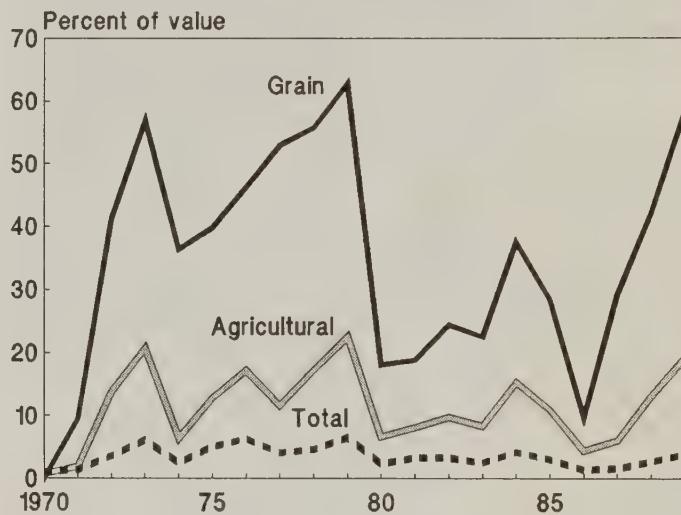
Because of the limited increase in Soviet export earnings (with or without MFN from the United States), the continued Soviet commitment to increasing its degree of

food self-sufficiency, and the USSR's substantial need for nonagricultural imports, little increase in agricultural imports is likely to occur.

The improved political climate, of which granting MFN status would be one component, could potentially increase the U.S. share of Soviet agricultural imports (fig. 6).

Figure 6

U.S. Share of Soviet Imports



However, much of Soviet agricultural imports are from other socialist countries, due to hard-currency constraints and commitments to allies. The USSR has been importing 70 percent or more of sugar, meat, fruit, and vegetables from socialist countries (table 15). Another large portion of agricultural imports is for tropical commodities—coffee, tea, spices, and tropical fruits.

The trade, investment, and other agreements being negotiated with the USSR are aimed at improving U.S. access to consumers in the USSR. The agreements should be most helpful for sales of commodities for which the central Government has relinquished more import control, generally not agricultural products. MFN status could lead to a lower Soviet tariff schedule on U.S. exports to the USSR, which could benefit manufactured goods not directly imported by the Government. The USSR Government imports most agricultural commodities directly, in essence, paying the tariff to itself.

U.S. Competitiveness

The United States maintains a large share (perhaps a third or more) of the 30–35 percent of Soviet agricultural imports that are not tropical and are made with convertible currencies. The United States has been the leading Western agricultural exporter to the USSR since the mid-1970's, with the exception of 1981 and 1983. In 1989, the United States accounted for almost a fifth of Soviet

agricultural imports, 60 percent of the value of grain imports and 65 percent of the volume.

Because the United States has the predominant market share of Soviet hard currency, nontropical agricultural imports and because Soviet agricultural imports may not increase or may even contract, additional U.S. agricultural exports to the USSR will need to be at the expense of other Soviet hard currency trading partners or it must be accomplished through countertrade or barter.

One suggestion to help the United States to compete for soft currency Soviet agricultural imports has been to have the U.S. Government somehow guarantee ruble convertibility. This would most likely result in subsidizing Soviet purchases of U.S. goods. The Soviet Government does not allow the ruble to be traded internationally. In 1989, the official trading rate for the ruble averaged 1 ruble to \$1.58; the black-market rate was 1 ruble to \$0.16 or less. The USSR is approaching a fiscal and monetary crisis which is further cutting the value of the ruble. The final result of trade programs involving rubles and guaranteeing their value will almost undoubtedly result in aid. Such aid could delay Soviet economic reform.

Another suggestion for increasing U.S. exports to the USSR involves credit programs. A waiver of the Jackson-Vanik Amendment would remove the legal barrier to

U.S. Maritime Agreement

Among the agreements being negotiated between the United States and the USSR in early 1990 is a maritime agreement. One potential agreement provision could concern cargo sharing and preference for commodities traded between the countries. A sharing or preference clause would require a portion of trade to be carried on U.S. ships. Requirements for cargo sharing or preference is a means of securing cargoes for much higher cost U.S. vessels. The Federal Government usually compensates shippers forced to use U.S. vessels. Without such subsidies to shippers, the price to importers such as the USSR for U.S. grain or other bulk commodities probably would not be competitive with grain from other exporting nations.

USSR access to USDA's GSM-102 and GSM-103 credit programs, which involve credit guarantees.⁶² Credit programs can involve subsidies, directly by extending low cost loans, or indirectly, by guaranteeing repayment to the lender. Theoretical and empirical analyses suggest that, in most cases, credit programs have only small benefits in expanding exports and reduce the donor's overall welfare.⁶³

Table 15--Major suppliers of selected agricultural goods to the USSR in 1988

Commodity	Quantity	Supplier and share
	1,000 metric tons	(Percent)
Grain and products 1/ 2/	35,855	United States (49), EC (16), Canada (15), China (4), Argentina (3), Hungary (3), and others (10)
Sugar 3/	3,894	Cuba (71), Mexico (9), Brazil (5), and others (15)
Fresh/frozen red meat	384	Hungary (28), Romania (14), France (11), Mongolia (8), New Zealand (2), and others (37)
Poultry	179	Hungary (77), Romania (10), Bulgaria (9), and others (4)
Butter	440	EC (77), New Zealand (9), Finland (2), and others (12).
Wool, scoured	114	Australia (55), New Zealand (21), Uruguay (8), Argentina (7), Mongolia (6), and Afghanistan (3)
Soybeans	1,397	United States (60), China (37), and others (3)
Soybean meal 2/	3,300	United States (45), Argentina (35), Brazil (15), and EC (5)
Fresh fruit and berries	969	Hungary (24), Cuba (21), China (12), Egypt (10), Poland (8), Greece (4), Bulgaria (4), Turkey (3), Italy (2), and others (12)
Dried fruit	64	Afghanistan (43), Iran (19), Romania (10), Yugoslavia (9), Turkey (5), and others (14)
Fresh vegetables	203	Bulgaria (37), Poland (28), Romania (12), Vietnam (7), Egypt (6), and others (10)
Cotton lint	90	China (44), United States (24), Greece (13), Egypt (9), Afghanistan (2), Syria (1), and others (7)

1/ Grain includes all major grains, rice, and flour in wheat equivalent at 78 percent. 2/ Estimate. 3/ Total Soviet sugar imports in terms of refined value converted at 0.92.

Effects on U.S. Agricultural Imports of MFN for the USSR

While granting the USSR MFN may not greatly benefit U.S. farmers, MFN poses little danger to U.S. farmers. Much of Soviet agricultural exports consists of purchases abroad for direct shipment to its dependencies. Cotton lint, which accounts for almost 50 percent of Soviet agricultural exports and currently faces U.S. tariffs about 3 times the MFN rate, could be an area for export growth. However, about 80 percent of Soviet cotton exports are to its allies and do not involve hard-currency trade. Furthermore, programs to decrease the reliance on cotton monoculture in Central Asia have led to a planned 15-percent cut in lint exports in 1990.

Raw furskins are duty free with or without MFN status. The 25 percent non-MFN duty, sometimes cited, applies to processed furskins. Over 99 percent of the \$169

million total Soviet furskin exports to all sources in 1988 were raw furskins, including approximately 10 percent sent to the United States. The United States has always allowed sable imports from the USSR, and, in 1988, ended a 36-year ban on mink and several other furskin imports from the USSR. In 1989, furskin imports from the USSR declined 18 percent to \$13.8 million, with raw sable skins probably accounting for about 95 percent (table 16).

The granting of MFN status would cut the tariff on Soviet vodka imports between 60 and 90 percent, depending on the vodka's quality, and could lead to imports substantially above 1989's \$19 million in spirits imports from the USSR.

Western agricultural exporters (not only the United States, but also Canada, a number of EC countries, Australia, and Argentina) have government export credit programs for agricultural commodities. Despite the potential benefits to the USSR and the availability of Western agricultural export credit programs, the USSR apparently has made little use of them (information on the EC countries' programs is weakest), with one notable exception.⁶⁴ Even when USSR hard currency earnings declined \$4 billion (18 percent) in 1985, the Soviets apparently did not make much, if any, use of government credit arrangements for agricultural imports.

The current Soviet hard-currency balance may be one reason behind reported Soviet interest in longer repayment periods on their commercial agricultural contracts, and a possible French Government credit arrangement. The Vice President of Eksportkhleb called the Soviet shortage of hard currency, and the need for deferred credit terms, temporary. He also said the congestion in Soviet ports, which delayed unloading of grain and other agricultural commodities, was not a severe problem.⁶⁵

Although Soviet hard-currency agricultural imports could fall in 1990, the overall hard-currency situation could deteriorate further, especially if domestic strikes disrupt exports and the Soviets maintain large imports to try to calm the consumer markets and continue to retool. Their credit rating, unlike that for East European countries, is considered good, and they should be able to secure commercial loans. However, somewhat higher rates associated with commercial loans may make them more interested in government credit programs.⁶⁶

Table 16--U.S. agricultural imports from the USSR

Commodity	1987	1988	1989
\$ million			
Casein and mixture	0.5	0.8	0.5
Furskins	19.9	16.8	13.8
Wool	0.3	0.2	1.5
Other animal products	0.6	0.2	0.3
Cotton	--	0.1	2.8
All other	0.6	0.7	1.0
Total	21.9	18.8	19.9
1,000 metric tons			
Cotton	--	--	0.9
Casein and mixture	0.3	0.2	0.1
Beverages 1/	0.6	0.4	0.1

-- = negligible or none.

1/ Excludes fruit juices. Million liters.

The United States readily captures large shares of the Soviet market for those agricultural commodities for which the United States has a comparative price advantage, and which are not undercut by subsidies from other exporters. The ability of the United States to maintain and expand agricultural exports to the USSR will depend primarily on increasing market shares based on competitive factors, from product quality to price. This could include U.S. Government export credit guarantees in the future, if the USSR decides to use credit programs offered by U.S. competitors.

The United States made large wheat sales to the USSR when it provided \$620 million in USDA's Export

Enhancement Programs (EEP) bonuses. The United States provided almost 40 percent of Soviet wheat imports in 1988–89 using EEP. The USSR bought more than 70 percent of its coarse grain imports in 1988–89 from the United States. This occurred even though the Soviets did not wish to alienate other exporters (as a hedge against less amicable U.S.-Soviet relations) and remained interested in importing from nonhard currency countries (China, Yugoslavia, and Hungary). The Soviets prefer Argentine and Brazilian soybean meal, however, because it is pelletized with better handling and storage characteristics.

Soviet Grain And Oilseed Agreements

The United States and the USSR have been negotiating a third long-term grain agreement. Reportedly, the tentative terms call for the Soviets to buy a minimum of 10 million tons, combined, of grain, soybeans, and soybean meal each year for five years. The Soviets must buy a minimum of 8 million tons of grain, which can be as low as 3.25 million tons of either wheat or feed grains in two successive years. Over the 5 years, however, wheat and feed grain imports are each to reach at least 20 million tons. The new maximum, without consultations, is 14 million tons per year. In March 1990, U.S. 1989/90 wheat and coarse grain stock total was estimated to be the lowest since 1984/85, and 1989/90 world grain stocks are the lowest since 1977/78.

The first agreement (1976/77-1980/81) was extended for 2 additional years and expired in September 1983 (fig. 7). The agreement was negotiated during a time of concern about inflationary effects on the United States of large Soviet purchases. In 1974 and 1975, the United States had imposed moratoriums on grain exports to the USSR. The

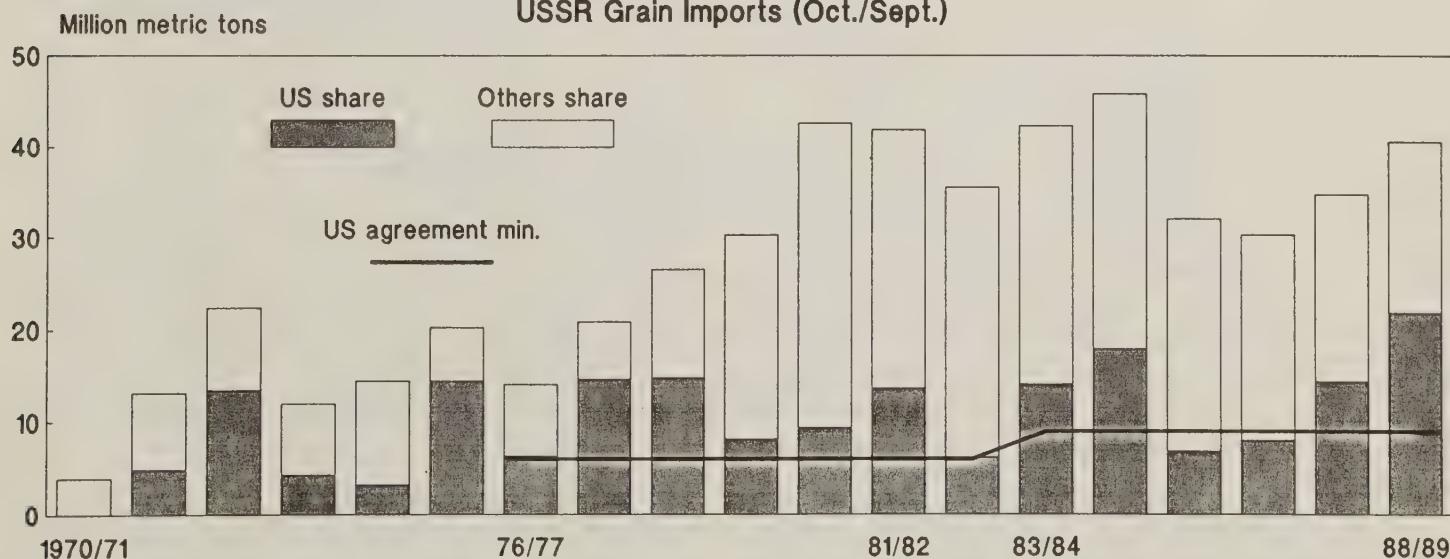
agreement: required the Soviets to buy 6 million tons of grain, with approximately equal proportions of wheat and corn, each agreement year; allowed the USSR to buy an additional 2 million tons of grain without consultation; provided that the maximum of 8 million tons could be raised upon consultation; and included an escape clause in case U.S. supplies were less than 225 million tons.

Concern about short supplies was not an important consideration at the time the second agreement was negotiated, as U.S. stocks were high, world grain prices had fallen, and the USSR had proven to be a large, although still volatile, grain importer. The second agreement, originally covering 1983/84-1987/88, was extended through 1990. The minimum Soviet purchase of 9 million tons was to consist of 4 million tons of wheat and 4 million of corn. The remainder could be purchases of wheat, corn, soybeans, and/or soybean meal (with 1 ton of soybeans or soybean meal equivalent to 2 tons of grain). The maximum for wheat and corn, combined, was 12 million tons without consultations. As in the first agreement, the maximum could be raised. Minimums and maximums were not set for soybeans and soybean meal.

Economists have argued that an exporter could benefit economically from a long-term grain agreement if it:

- reduces variability in the timing of Soviet purchases;
- improves information about Soviet trading intentions;
- increases total Soviet purchases from all sources;
- increases the exporter's share of total world grain exports; or
- provides the exporter a price advantage.

Figure 7



The first three benefits likely would spill over to other exporters. Economic benefits to the exporter may be reduced if:

- an agreement (or the USSR's combined agreements with various exporters) does not cover the bulk of Soviet purchases;
- the terms of the agreements are not kept;
- the exporter's increased sales to the Soviets are offset by higher sales in the exporter's traditional markets, by competitors who lost out in the Soviet market; or
- the agreement does not augment information about Soviet crop conditions and buying intentions.

If an agreement minimum (or combined minimums of Soviet agreements with all countries) is high enough to force the USSR to stockpile in years of high production, the supplies could provide the Soviets a cushion in lean years, even out year-to-year import demand, and contribute to price stability in world grain markets. The security provided by agreements might also encourage the Soviets to become more dependent on imported feedstuffs and accelerate domestic livestock production.

The Soviet Government, with its State trading and planned-economy tradition, reliance on barter agreements, and interest in balancing hard-currency trade, traditionally concludes 5-year bilateral trade agreements with bloc countries, and likes to do so with Western countries. After the U.S. embargo in 1980, the Soviets entered into 5-year grain agreements with Argentina and Canada, which they subsequently renewed. A 1985 agreement with China included sizeable quantities of grain.

In total, the USSR's agreements covered only about 50 percent of its annual average import requirements during 1981-90 (table 17). Soviet agreements with Argentina and the United States during the 1980's apparently were less flexible about substitutions between grains or between years than were pacts with other exporting countries.

If the Soviets were to renew their trade agreements with other countries at the present level or higher, *and* if their import needs fall in the 1990's, the agreements could cover more than 50 percent of their average total annual grain import requirements. The renewal of agreements could cover most wheat imports *if* the Soviets are able to increase Government purchases of high-quality domestic wheat and decrease wheat import needs. However, Soviet commitment to such high wheat imports runs counter to internal opposition.

Table 17--Long-term agricultural purchase agreements, USSR

Country	Duration	Terms
United States	October 1983-September 1988 (extended through December 1990)	Minimum of 9 million tons of grain per year, including 4 million of wheat, 4 million corn, and 1 million wheat or corn or soybeans/meal (1 ton soy=2 tons grain); 12-million-ton maximum unless raised by United States
United States	1991-95	Minimum of 10 million tons of grain per year, roughly 4 million tons of wheat, 4 million coarse grain, and rest grain, soybeans or soymeal (1 ton soy=2 tons grain; 14-million-ton maximum unless raised by United States
Canada	August 1986-July 1991	25 millions tons of wheat and feed grains over the 5 years
Argentina	December 1986-November 1991	Minimum of 4 million tons of coarse grains, including 2 million corn, 2 million sorghum; and 500,000 soybeans
Argentina	December 1991 November 1996	Reportedly the agreement calls for total annual shipment of 4.5 million tons of feedgrains and soybean products (ton of soy=2 tons of grain).
PRC	1986-1990	As part of an overall bilateral trade protocol, 7.5 million tons of corn and 2.6 million tons of soybeans over 5-year period
France	Not available	Trade protocol calling for purchases of wheat; details unknown
Hungary	Not available	Details unknown; formerly a 5-year trade protocol called for 500,000 tons of wheat and corn annually, not binding in event of poor harvest
Turkey	Not available	Details unknown
Australia	Not available	Reportedly involves wheat with no minimum or maximum

The Soviets have not always fulfilled their grain agreements, especially those with the United States and Argentina. They did not fulfill the second U.S. agreement for 3 years. In 1984/85 and 1985/86, they bought less wheat than required, and in 1986/87 the overall 9-million ton minimum was not met. The Soviets linked their refusal to buy U.S. wheat to noncompetitive U.S. prices. The Argentine agreement has gone unfulfilled since the end of the 1984/85 year. The third agreement with Argentina may be much more flexible, allowing substitution between feed grains and soy products.

If the agreements' basic maximums are set low enough to require the Soviets to ask to have them raised early in crop years, it could provide advance information about their import requirements. Such information could augment the USDA's export sales, and the world crop and trade reporting systems, in reducing market disruptions caused by unexpectedly large purchases. However, unlike the agreement with the United States, others apparently do not have maximums.

The Soviets may expect several benefits from agreements. An agreement could reduce their vulnerability to embargoes. Guaranteed supplies from exporting countries allow the USSR to transfer costs, for stocking against Soviet production shortfalls, to foreign suppliers. Assured grain supplies provided by agreements may put the USSR in a better bargaining position *vis a vis* other exporting nations, although one Soviet economist argues that long-term accords have resulted in higher prices for the Soviets.

An agreement may also help the Soviets maintain a presence in an exporting country's market, which might affect government and business decisions about production, storage, and trade programs in the exporting country. The role of agricultural imports and the desirability of long-term grain agreements are now an openly debated topic in the USSR, including discussion on the potential for higher world grain prices associated with trade liberalization.

[Kathryn Zeimetz]

Commodity Markets

Soviet grain imports in marketing year 1990/91 (July–June) could drop from 1989/90, but are forecast at just above the 33-million ton average of the last 5 years. For the United States to again capture a 50-plus percent share as it did in the 2 previous years, competitive prices must be maintained. As the political and economic changes in Eastern Europe continue, the USSR has searched out new sources of supply for livestock product imports, which include the United States.

The USSR's dependence on oilseed and meal imports may not diminish in 1990/91 (October–September), even if total 1990 oilseed output surpasses 1989's record production. Soviet sugar imports may fall some in 1990, and imports from Cuba could also fall. Soviet cotton exports in 1990 may fall to their lowest level since their peak of 972,000 tons in 1977 and may continue to decline to the low early 1970's level as the Soviets continue to drastically cut cotton area.

Grain Imports Remain Important

The level and structure of Soviet grain imports by the mid-1990's will be determined by how quickly their agricultural and trade policies and programs are changed. Policy and program changes will affect grain imports by influencing:

- domestic grain and forage output and quality;
- grain handling and storage practices;
- State grain procurements;
- feeding efficiencies and livestock rations;

- the relative priorities of grain, protein feed, and animal product imports;
- effective consumer demand for livestock products versus other consumer goods; and
- the availability of hard currency for grain purchases.

In the short term, dramatic shifts in any of the these areas are not likely, with the possible exception of the State's ability to induce farms to sell more grain. With this caveat in mind, and given the magnitude of the problems in other spheres, Soviet grain import demand may remain large in the early 1990's.

Trade and Output

Soviet grain imports in marketing year 1990/91 are forecast to drop from 1989/90, but exceed the 33-million ton average of the last 5 years. Despite a 16-million ton rise in total grain output in 1989, State grain procurements, as a share of total grain output, were less than 30 percent, the lowest in over 30 years. If State procurements decline even further in 1990, import demand could be stronger. While procurement plans call for about 86 million tons, total farm sales of grain to the State in 1989 were only 59.5 million, the lowest since the disastrous crop in 1984 (table 18 and fig. 8).⁶⁷ Serious domestic price distortions,

Table 18--Production and State purchases of grains by major republics, USSR

Region	1976-80 average	1981-85 average	1986	1987	1988	1989
Million metric tons						
Production						
USSR	205.0	180.3	210.1	211.4	195.1	211.1
RSFSR	113.9	98.8	118.0	109.0 ^{1/}	102.8	113.2
Ukraine	43.2	39.3	43.1	50.2	47.4	53.2
Kazakhstan	27.5	21.3	28.3	27.4	22.6	20.5
Procurement						
USSR	77.7	66.6	78.8	73.3	61.4	59.5
RSFSR	42.4	35.0	42.1	35.0	29.2	31.0
Ukraine	14.0	13.4	15.2	18.1	17.3	17.6
Kazakhstan	16.3	12.6	16.7	14.6	9.7	5.9

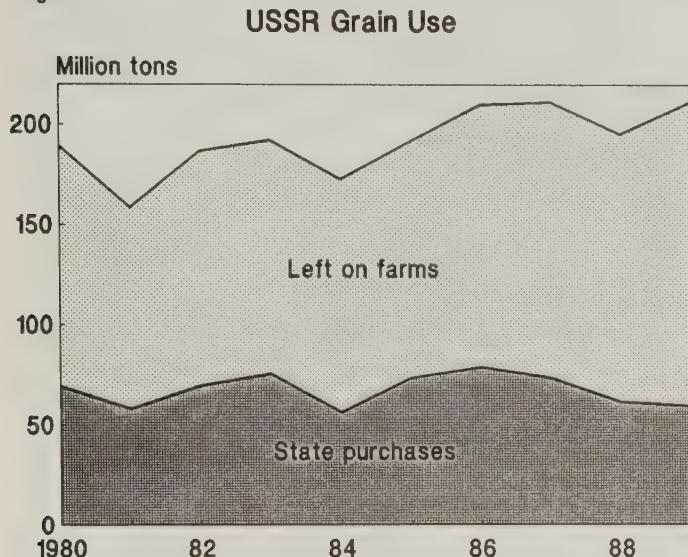
NA = Not available. 1/ Preliminary data from 1989 USSR and republic plan fulfillment reports.
Sources: *Narodnoe khozyaistvo*, 1988 and *Vestnik statistiki*, various issues.

the falling purchasing power of the ruble, and the growing autonomy of farms and regions largely account for the continued decrease in farm grain sales. In yet another attempt to stimulate sales, the State announced in May



1990 that producer prices would be as much as doubled for some grains.

Figure 8



Soviet grain procurement policy is likely to undergo significant changes in the next couple years. Key issues under discussion include:

- setting all-union procurement plans for food grains only, and switching to republic self-sufficiency for feed grains;
- sharply reducing the number of price zones, thereby stimulating production in areas with the most favorable natural and economic conditions; and
- eliminating all quantity bonuses connected with sales to the State, i.e. differential price increases.⁶⁸

Despite increased grain output, and only a slight decline in State procurements in 1989, total Soviet grain imports in 1989/90 will fall just below 1988/89's 39 million tons.

Soviet grain imports in July–December 1989 nearly repeated the level of sales during the same period in 1988, with the volume of Soviet purchasing during January–April 1990 only slightly less than in the same period in 1989.

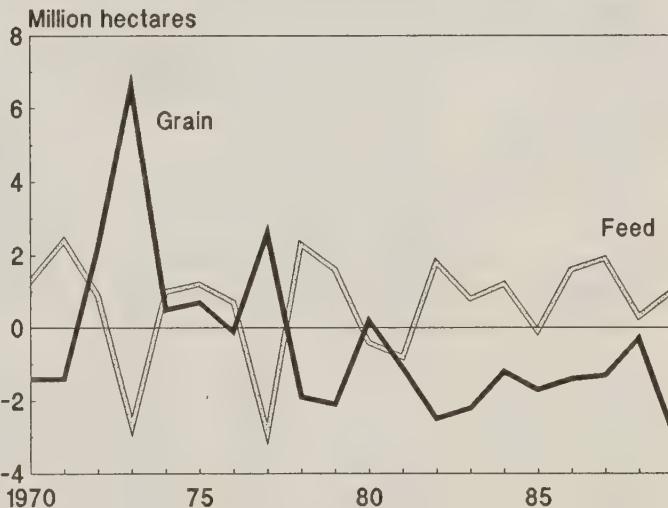
For the United States to again capture more than 50 percent of the Soviet market in 1990/91, as it did in the 2 previous years, competitive prices must be maintained. The estimated U.S. share of the Soviet grain market in 1989/90 was about the same as 1988/89's 57 percent. The EC's 20-percent share and Argentina's 3-percent share remained largely unchanged in 1989/90. However, higher barley sales increased Canada's total share of the market in 1989/90 to about 11 percent. Australia's share of the market was negligible for the third consecutive year.

Although the trend over the last two decades has been toward dependence on grain imports, the Soviets continue to call for grain self-sufficiency. They see the attainment of grain independence through the success of two main strategies: (1) increased stability and growth of grain output, and (2) reduction of grain losses and waste.

The expansion and improvement of intensive technology practices (IT) continues to be stressed as the panacea for raising grain production in 1990. In 1989, over 43 million hectares of grain were reportedly cultivated under IT, up from about 39 million hectares the year before. In 1985, when the IT program was first introduced on a wide scale, just over 18 million hectares were included in the program. IT is optimistically targeted to include about 50 million hectares of grain this year, over 60 million hectares by 1995, and as much as 80 million by 2000.

Total grain area has consistently fallen in recent years, primarily the result of farms switching to forage crops (fig. 9). While some Soviets state that clean summer

Figure 9
Change in USSR Grain, Feed, and Fallow Areas



fallow area is currently at an optimum size of about 21 million hectares, total grain area is considered to be well below the desired level.⁶⁹ According to N.

Krasnoshchekov, Deputy Chairman of the Commission for Food and Procurements, grain area must rebound to (an unlikely) 119–120 million hectares by 1992–93.⁷⁰

Soviets agree that the structure of grain crops should be altered. Expansion of corn for grain area is viewed as the single most important factor behind rising output (fig. 10). Plans have called for corn to be cultivated on 5–7 million hectares with output reaching at least 20–22 million tons this year.⁷¹ Corn output in 1989 is estimated at 16 million tons, from an area of 4.5 million hectares. Increased area sown to pulses is also stressed to improve

Figure 10

USSR Corn Area

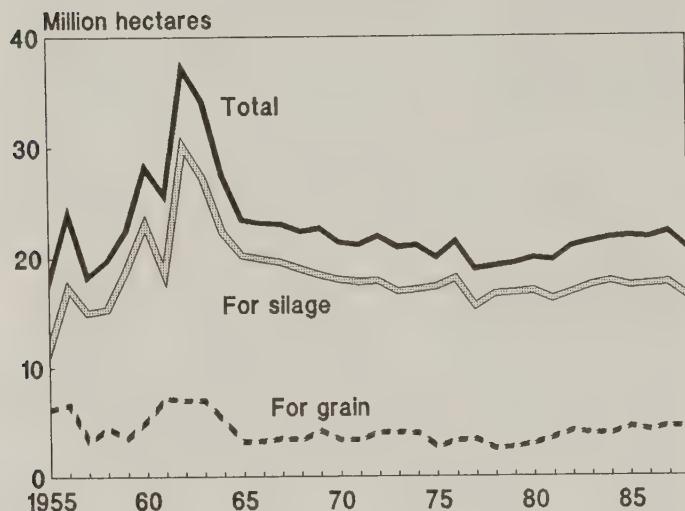


Figure 11

USSR Grain Production

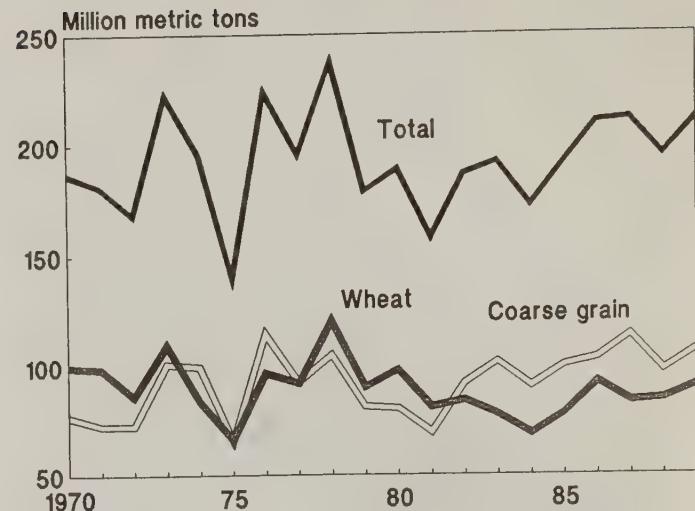


Table 19--Area, yield, and production of grain, USSR 1/

Year	Wheat 2/			Rye	Barley	Oats	Corn	Other 3/	Total grain
	Winter	Spring	Total						
1,000 hectares									
Area									
1966-70 average	18,280	48,894	67,174	11,505	20,133	8,680	3,517	10,876	122,083
1971-75 average	18,443	43,025	61,468	8,500	28,370	11,310	3,596	10,743	123,987
1976-80 average	20,471	40,240	60,711	7,714	34,011	12,080	2,969	10,421	127,905
1981-85 average	18,709	35,023	53,732	9,331	30,530	12,352	4,000	11,441	121,386
1986	16,632	32,096	48,728	8,741	29,964	13,173	4,223	11,648	116,477
1987	15,319	31,365	46,684	9,725	30,654	11,790	4,573	11,786	115,212
1988	18,313	29,745	48,058	10,115	29,732	10,946	4,431	11,630	114,912
1989 4/	19,000	28,500	47,500	10,600	27,500	10,600	4,500	11,300	112,000
1990 5/	19,000	29,000	48,000	10,000	28,500	10,000	4,500	11,000	112,000
Metric tons per hectare									
Yield 1/									
1966-70 average	1.96	1.11	1.34	1.12	1.50	1.38	2.72	1.16	1.37
1971-75 average	2.26	1.10	1.45	1.35	1.53	1.31	2.84	1.19	1.46
1976-80 average	2.48	1.22	1.64	1.41	1.62	1.42	3.22	1.21	1.60
1981-85 average	2.28	1.01	1.45	1.53	1.42	1.42	3.27	1.22	1.49
1986	2.80	1.43	1.89	1.76	1.80	1.66	2.95	1.22	1.80
1987	3.02	1.18	1.78	1.86	1.91	1.57	3.23	1.55	1.83
1988	2.98	1.01	1.76	1.83	1.50	1.40	3.62	1.40	1.70
1989 4/	3.24	1.02	1.91	2.03	1.80	1.56	3.56	1.51	1.88
1990 5/	3.26	1.14	1.98	2.10	1.81	1.50	3.56	1.50	1.92
1,000 metric tons									
Production									
1966-70 average	35,888	54,304	90,192	12,834	30,454	11,938	9,558	12,585	167,561
1971-75 average	41,590	47,345	88,935	11,493	43,289	14,812	10,215	12,810	181,554
1976-80 average	50,725	48,948	99,673	10,880	55,150	17,161	9,568	12,595	205,027
1981-85 average	42,726	35,204	77,930	14,280	43,480	17,540	13,080	14,001	180,311
1986	46,528	45,778	92,306	15,248	53,889	21,929	12,479	14,217	210,068
1987	46,237	37,075	83,312	18,055	58,409	18,495	14,808	18,286	211,365
1988	54,495	29,950	84,445	18,517	44,463	15,287	16,030	16,317	195,059
1989 4/	61,500	29,000	90,500	21,500	49,500	16,500	16,000	17,100	211,100
1990 5/	62,000	33,000	95,000	21,000	51,500	15,000	16,000	16,500	215,000

1/ Some figures may not add or calculate because of rounding. 2/ Production data for winter wheat and spring wheat derived from official area and yield data for 1981-85. 3/ Includes millet, buckwheat, rice, pulses, and miscellaneous grains. 4/ Estimates for individual grains. 5/ USDA May 1990 forecast.

Convertible Rubles For Wheat

An August 1989 Council of Ministers decree authorized a 1989-90 trial program for the State to pay convertible rubles to farms for certain wheat, oilseed, and pulse sales to the State. To qualify for the hard currency rubles, farms must meet specific production, procurement, and quality criteria. The convertible rubles may be used to purchase foreign consumer goods, farm equipment, and farm supplies.

By paying farmers for grain, at prices below the cost of imported grain, the State is trying to raise domestic purchases and reduce imports. According to M.L. Timoshishin, First Deputy Chairman of the State Commission on Food and Procurements, from 400 million to 700 million convertible rubles (U.S. \$640 million-\$1.1 billion) will be made available to farms through the new measure (*Izvestiya*, 7 September 1989). An assessment of the measure is to be presented to the Council of Ministers in the first quarter of 1991.

As of January 1, 1990, reported sales of quality wheat to the State under the new convertible ruble program

amounted to only about 225,000 tons, far below the 10-15 million tons the State wanted. Only about 11 million rubles were to be paid out as of January 1990. The poor response to the new measure reflects delay in introducing the program, poor implementation and administration, continued distrust by farms of State promises, inadequate price incentives, and excessive restrictions connected with the disposal of hard ruble earnings.

Pressures that led to hard currency payments for domestic grain exist throughout the Soviet economy, where the ruble has lost value. The latest incentive scheme has come under criticism by producers of commodities not included in the measure. The reactions have taken on a Republic dimension as well, with producers in the Baltics and Byelorussia complaining that they are unfairly discriminated against because their primary crops are not included in the program. There is little reason to expect a marked response to the program on the part of farms this year, as most inherent problems have not been adequately addressed. Failure of this program highlights further the importance of monetary reform as part of an effective reform package.

the quality of feed supplies. For food grains, greatest priority is placed on raising area planted to durum and quality hard wheat, buckwheat, and millet. Area sown to oats, spring barley, and low-quality wheat are targeted for reduction. Some Soviets believe it would also be economical to deemphasize rice output, opting instead for increased imports.

Soviet authorities repeatedly emphasize that increased grain losses have always been associated with higher grain output. Sharp increases in investment to upgrade the rural infrastructure and the grain milling and mixed-feed sector are, therefore, seen as a remedy for persistent grain losses. Plans call for constructing thousands of miles of new roads, especially in the New Lands, expanding and improving rail lines, raising the output of covered railroad cars, increasing regional grain storage capacity, modernizing elevators, improving the supplies and efficiency of harvesting, cleaning and drying equipment, and retooling milling facilities and mixed feed operations.⁷²

Prospects for 1990 winter grain yields appear even better than for 1989's record yielding crop. Reports indicate, however, that the area sown to 1990 winter grains could be down slightly from 1989, when seeded area was about 34.5 million hectares. An unusually mild 1989/90 winter in the European USSR is estimated to have kept winterkill below average, perhaps less than last year's estimated 10 percent.

The Soviets report that winterkill on average requires annual reseeding of 6-7 million hectares, with winterkill reported at an average 18 percent during 1976-80, 16 percent during 1981-85, and 19 percent and 20 percent in 1986 and 1987. The USDA May estimate for 1990 Soviet bunkerweight production was 215 million tons, from an area of 112 million hectares (table 19 and fig. 11). The Soviets, for the first time ever, reported total grain output on a bunkerweight and cleanweight basis in 1989. Data indicate grain dockage and waste has been running at about 7 percent of bunkerweight output in the 1980's. However, unlike USDA estimates of dockage and waste, the newly released Soviet figures do not include losses of grain between procurement and milling.

Grain output (in bunkerweight) in 1989 was 211 million tons, up 8 percent from the year before, but roughly the same as production in 1986 and 1987. Total yield was a record 1.88 tons per hectare. Favorable weather in the European part of the country contributed to record 1989 winter grain yields, although severe drought in parts of the New Lands dampened overall spring grain yields. Final grain area was the lowest since at least 1955, declining for the ninth consecutive year by about 3 million hectares from 1988. Conversely, forage area rose, as farms continued to switch to cultivating roughage.

Feed Use Continues to Grow

Further growth in grain for feed use is likely in 1990/91, raising total domestic grain use above the 1989/90 record, estimated by USDA at 246 million tons (table 20). V.V. Nikitin, Chairman of the Commission for Food and Procurements, placed total grain use at 250 million tons in a speech before the Politburo on November 3, 1989.⁷³

Record use of grain for feed, estimated at 139 million tons in 1989/90, primarily accounts for the growth in total use. According to one source, about 140 million tons of grain are used in the livestock sector annually, of which about 65–75 percent is used in the production of mixed feeds.⁷⁴ The combination of increased coarse grain output, large feed grain imports, increased quantities of grain held on farm, and pressure from Moscow to raise livestock product output underlie the record feed use estimate for 1989/90.

USDA estimates the Soviets' food use of grain unchanged at 48 million tons this year, slightly less than the 50–60 million tons of grain for food cited in several Soviet reports.⁷⁵ Estimated seed use and industrial use of grain

this year remain the same, while a small amount of stock building is forecast due to reduced grain sales to the State. Dockage and waste is estimated at 29 million tons (14 percent of output).

Wheat Output and Demand

To the extent popular pressure to reduce wheat imports, and the program to pay Soviet farms hard rubles for high-quality wheat, are successful, quality wheat import demand could fall in 1990/91. Stagnant wheat imports means that the United States must keep its prices competitive with the EC to maintain the roughly 30-percent share of the Soviet wheat market it held the last 2 years.

Soviet 1989/90 wheat imports are estimated at 14 million tons—only 1.5 million tons below 1988/89—even though 1989 domestic wheat output was up and internal pressure opposing wheat imports continued to grow. Soviets rallying against purchases of wheat from abroad refer to the massive domestic output of wheat, and the importance of compensating Soviet producers. A. Sizov, a Soviet

Table 20--Supply and use of grain, USSR 1/

Year beginning July 1	Produc- tion 2/	Trade		Avail- ability	Utilization							Stock change 3/
		Imports	Exports		Seed	Indus- trial	Food	Dockage- waste	Feed	Total		
Million metric tons												
Total grains 4/												
Averages												
1976/77-80/81	205.0	22.3	2.0	225	26	6	46	28	121	225	0	
1981/82-85/86	180.3	39.9	0.5	220	25	5	47	19	121	216	4	
1986/87	210.1	27.5	0.5	237	25	5	47	23	130	230	7	
1987/88	211.4	32.0	0.5	243	25	5	47	30	132	239	4	
1988/89	195.0	39.0	0.5	234	25	5	48	22	135	235	-1	
1989/90	211.1	38.0	0.5	249	25	5	48	29	139	246	2	
1990/91 5/	215.0	36.0	1.0	250	25	5	48	29	141	248	2	
Wheat												
Averages												
1976/77-80/81	99.7	8.9	1.0	108	13	2	35	14	43	107	1	
1981/82-85/86	77.9	21.0	0.5	99	11	2	36	8	39	96	3	
1986/87	92.3	16.0	0.5	108	11	1	36	10	45	103	5	
1987/88	83.3	21.5	0.5	104	11	1	36	13	40	101	3	
1988/89	84.4	15.5	0.5	99	11	1	37	10	41	100	-1	
1989/90	90.5	14.0	0.5	104	11	1	37	12	40	102	2	
1990/91 5/	95.0	15.0	1.0	109	11	1	37	12	46	107	2	
Coarse grains 6/												
Averages												
1976/77-80/81	94.9	12.8	1.0	107	11	4	7	13	73	108	-1	
1981/82-85/86	90.7	18.0	0	109	13	3	7	9	76	108	1	
1986/87	105.9	11.0	0	117	13	4	7	11	80	115	2	
1987/88	113.7	10.0	0	124	13	4	7	15	84	123	1	
1988/89	97.5	23.0	0	121	13	4	7	11	86	121	0	
1989/90	107.0	23.0	0	130	13	4	7	15	91	130	0	
1990/91 5/	106.5	20.0	0	126	13	4	7	15	88	126	0	

1/ All are USDA estimates and forecasts except production. Rounded to the nearest million tons, except for production and trade data. Totals may not add because of rounding. 2/ Calendar year basis.

3/ Difference between availability and total use. 4/ Includes wheat, coarse grains, buckwheat, rice, pulses, and miscellaneous grains. 5/ USDA May 1990 forecast. 6/ Includes rye, barley, oats, corn, sorghum, and millet.

agricultural economist, admonishes the Government for the fact that "50 kilograms of the 130–133 kilograms of grain products consumed per capita each year are made from imported grain," and nearly "one in two packets of noodles is made from foreign grain."⁷⁶ Sizov contends that, if the Soviet Union reduced its wheat imports by 2–3 million tons a year, it could stop importing wheat completely in the next 5–7 years.⁷⁷ In August 1989, the Chairman of the Supreme Soviet's Committee on Agrarian Questions called on the Government to immediately adopt measures to limit the import of wheat and other foodstuffs.⁷⁸

Decreased sales of milling quality wheat to the State by Soviet farms, rather than the low output of quality wheat, primarily account for continued heavy import demand. The Government may not be able to induce farms to sell significantly more grain to the State in 1990. State procurements of wheat in 1989 were estimated at about the same level as 1988's 35 million tons, despite an increase in output of over 7 million tons and a procurement target of 49 million (table 21). Furthermore, this occurred despite the State's offer of convertible rubles for above average sales of quality wheat in 1989.

Table 21--Grain production and procurements, USSR

Grain	Production	Procurements	Imports
Million metric tons			
Wheat			
1976-80 average	99.7	47.9	8.9
1981	81.1	37.0	20.3
1982	84.3	36.7	20.8
1983	77.5	34.1	20.5
1984	68.6	25.5	28.1
1985	78.1	35.1	15.7
1986	92.3	43.8	16.0
1987	83.3	35.2	21.5
1988	84.4	34.8	15.5
1989	90.5	35.0	14.0
Coarse Grain			
1976-80 average	94.9	25.0	12.8
1981	69.4	17.0	26.0
1982	91.8	27.4	12.5
1983	101.5	34.6	11.5
1984	90.4	24.2	26.9
1985	100.0	32.6	13.7
1986	105.9	29.2	11.0
1987	113.7	31.3	10.0
1988	97.5	20.6	23.0
1989	107.0	17.5	23.0

Source: Production and procurement are from *Sel'skoe khozyaistvo SSSR*, 1988 and estimates for 1989. Imports are USDA July-June estimates.

Feed use of wheat, which USDA estimates at 40 million tons in 1989/90, averages up to 45 million tons, according to a report from the Soviet All-Union Institute for Agricultural Economic Research.⁷⁹ Moreover, a large share of wheat fed is reportedly of milling quality. A. Sizov estimates that about 13–16 million tons of high-

quality hard wheat, and 1.3–1.5 million tons of durum wheat, are fed annually.

U.S. Wheat Sales

During July 1989–mid-May 1990, the Soviets contracted for about 4 million tons of U.S. wheat. Nearly all was subsidized through USDA's EEP at a cost of about \$76 million (table 22). As a result, the U.S. share of Soviet 1989/90 wheat imports should match 1988/89's 30 percent.

Table 22--U.S. grain sales to the USSR

Year 1/	U.S. offer to sell	USSR purchases from U.S. Wheat	USSR purchases from U.S. Corn	USSR purchases from U.S. Total
Million tons				
1976/77	2/ 8	3.1	3.1	6.1
1977/78	15	3.5	11.1	14.6
1978/79	17	4.0	11.5	15.5
1979/80	3/ 25	2.2	5.8	7.9
1980/81	14	3.8	5.7	9.5
1981/82	23	6.1	7.8	13.9
1982/83	23	3.0	3.2	6.2
1983/84	22	7.6	6.5	14.1
1984/85 4/	22	2.9	15.8	18.6
1985/86	22	.2	6.8	7.0
1986/87	12	4.1	4.1	8.2
1987/88	No maximum	9.0	5.5	14.6
1988/89	24	5.4	16.3	21.7
1989/90 5/	22	3.8	15.9	19.7

1/ Grain agreement year--October/September.
2/ Soviets were also told that the 1976 U.S. grain crop could meet needs in excess of this. 3/ U.S. offer later withdrawn. 4/ Total does not add because of rounding. 5/ As of May 15, 1990.
Source: U.S. Export Sales.

EEP bonuses on U.S. wheat sales to the USSR totalled an estimated \$620 million for the entire 21 million tons of wheat the Soviets purchased under the EEP since the first offer in May 1987 (table 23). Higher world market prices for wheat (largely due to drought-reduced world supplies) decreased the average size of EEP bonuses in much of 1988 and 1989. However, the April 1990 bonuses were the highest since February 1988. The USSR continues to be the largest recipient of U.S. EEP bonuses again this year, ahead of Egypt, China, and Algeria.

Continued heavy subsidization of wheat sales and a larger wheat crop in 1989 should enable the EC to retain at least a 30-percent share of the Soviet market in 1989/90 (fig. 12). Illustrating the EC's fierce competition for the market in early 1990, EC wheat sales were reportedly priced at about \$150 per ton with export restitutions of over \$75 per ton. U.S. wheat sales to the USSR were averaging about \$154 per ton due to EEP bonuses of about \$20 per ton.

Table 23--U.S. EEP wheat purchases by the USSR 1/

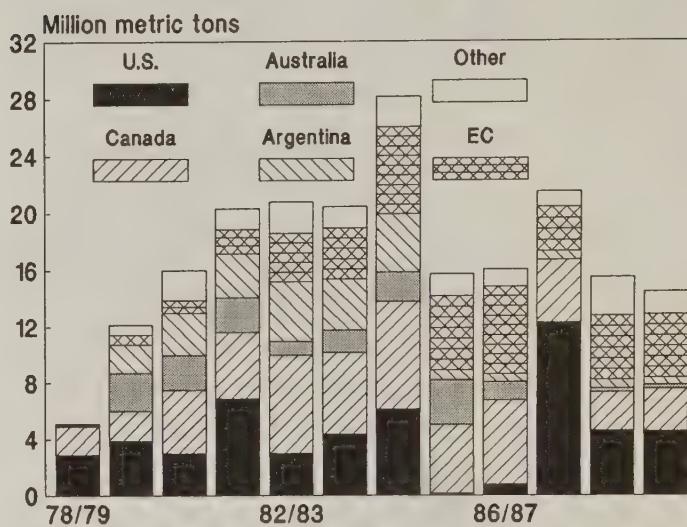
Date	Amount	Type 2/	Bonus rate 3/	Total bonus
	Tons		\$/ton	\$ million
Total	21,300,150	--	29.13	620,415,035
1986/87	4,000,000	HRW	41.52	166,093,500
1987/88	8,805,000	HRW/HRS	32.01	281,802,278
1988/89	4,696,000	HRW/HRS	20.59	96,704,290
1989/90				
Dec.	180,000	HRW	15.49	2,788,200
Dec.	135,000	DNS	15.49	2,091,150
Dec.	75,000	HRS	15.49	1,161,750
Dec.	410,000	HRW/HRS/DNS	16.81	6,892,100
Jan.	275,000	HRW	20.50	5,637,500
Jan.	205,000	DNS	20.50	4,202,500
Jan.	427,750	HRW	20.67	8,841,593
Jan.	70,000	DNS	20.67	1,446,900
Jan.	350,000	HRW	18.73	6,555,500
Jan.	175,000	DNS	18.73	3,277,750
Jan.	498,500	HRW/DNS	17.58	8,763,630
Apr.	125,000	HRW	31.53	3,941,250
Apr.	175,000	HRW	34.13	5,972,750
Apr.	149,000	HRW	28.87	4,301,630
May	250,000	SRW	18.18	4,545,000
May	299,100	SRW	18.04	5,395,764

1/ Sales as of 5/15/90. 2/ HRW is hard red winter wheat, HRS is hard red spring wheat, DNS is dark northern spring, and SRW is soft red winter.

3/ Weighted average.

The Canadian share of the 1989/90 Soviet market may have risen to over 20 percent, benefitting from a larger 1989 wheat crop and existing Soviet obligations under its grain agreement. The Canadian Wheat Board does not disclose the price it charges the Soviets. Canadian and Soviet government data on the quantity and value of their grain trade show the Canadians reporting lower unit values.

While Australia's estimated share of Soviet wheat purchases remained at only about 2 percent, a new overall

Figure 12
USSR Wheat Imports (July/June)

trade agreement recently concluded with the USSR could raise its share to pre-1987/88 levels. Argentina's tight wheat supplies continued to constrain its wheat exports to the Soviets; its share held steady at about 3 percent.

Coarse Grain Demand

Soviet coarse grain purchases in 1990/91 will remain heavy, if world prices remain attractive, and, if Soviet farm sales of feed grains to the State fall further. The United States should keep its nearly 75-percent share of the feed grain market in 1990/91, which it has held during the last 2

Table 24--Unit value of wheat exports to the USSR by country of origin

Country	1986	1987	1988	U.S. \$ per ton
Canada				
Canada reports	125	125	180	
USSR reports	96	92	142	
Difference	29	33	38	
United States				
U.S. reports	NS	81	94	
USSR reports	NS	79	94	
Difference	NS	2	0	
France				
France reports	108	73	132	
USSR reports	111	74	117	
Difference	3	1	15	

NS = No sales

Sources: Various issues of *Vneshnyaya torgovlya SSSR*, *Canada's Trade in Agricultural Products*, *Foreign Agricultural Trade of the United States*, *EUROSTAT: External Trade Accounts, Surveys and Statistics*.

Production Costs

The average prime costs (*sebestoimost'*) per ton of producing grain could increase this year because of the continuing increase of inputs costs. No data are available for 1989, although the further elimination of subsidies on agricultural inputs may have been counterbalanced as yields rose and area declined. The average national prime costs of producing grain in 1988 were up by 7 percent for collective farms and 5 percent for State farms compared to 1987, as some subsidies for inputs were stopped (table 25). In Kazakhstan, due partly to drought-reduced yields in 1988, per ton grain production costs rose by about 18 percent from 1987.

Although prime costs were up, the average "profitability" (*rentabilnost'*) of farms was reportedly higher in 1988, as grain procurement prices rose by 20 percent on average that year. Average "profitability" on farms producing grain was reportedly 99 percent in 1988—117 percent on collective farms and 83 percent on State farms.⁸⁰ ("Profitability" is defined by the Soviets as the difference between the average procurement price and the average prime cost of production, divided by the latter.) The share of unprofitable grain farms is, nevertheless, cited as 25 percent of the total.

years, if its corn prices remain competitive with EC and Canadian barley and feed wheat and Argentine corn (fig. 13).

Soviet feed grain imports in 1989/90, estimated at the same as 1988/89's 23 million tons, reflect the drop in grain sales

Figure 13
USSR Coarse Grain Imports (July/June)

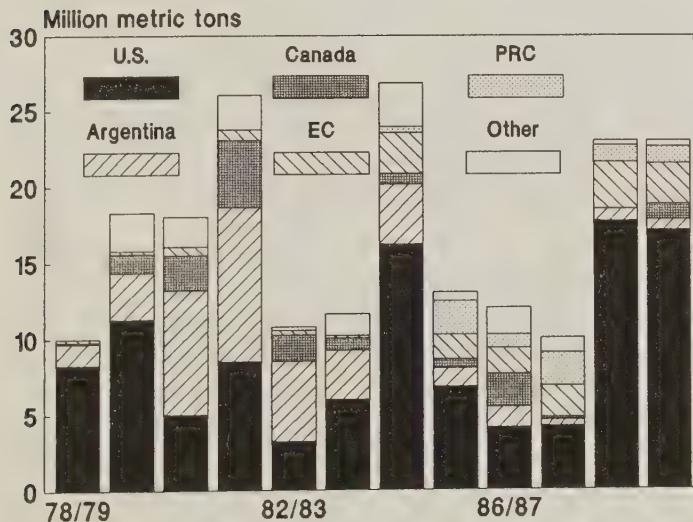


Table 25--Prime cost of producing grain (excluding corn), USSR 1/

Farm type	1976-80 average	1981-85 average	1986	1987	1988
Rubles per ton					
USSR					
State	77	102	109	112	120
Collective	68	86	91	92	97
RSFSR					
State	NA	108	111	118	123
Collective	NA	95	95	102	106
Ukraine					
State	NA	NA	80	77	79
Collective	NA	NA	73	68	72
Kazakhstan					
State	76	95	103	103	122
Collective	69	89	94	88	102

1/ The costs do not include charges for land and fixed capital and thus understate true costs.

Sources: *Narodnoe khozyaistvo*, various years, and N. N. Krasavin, *Effektivnost' zatrata v sel'skom khozyaistve*, Moscow, 1986.

to the State and the Government's high priority on increasing livestock product output. Although 1989 coarse grain output was estimated up almost 10 million tons, sales of feed grains to the State in 1989 were estimated to be 17.5 million—about 3 million less than in 1988—and more than 13 million tons below 1987 sales.

Decreased procurements of grain, if not offset by imports, will likely cause the State to cut production of mixed feeds in its enterprises in 1990, creating greater reliance by livestock farms on local mixed feed operations. It appears that the State followed this policy in 1989, as mixed feed output by the State was down.

Even though U.S. corn sales may not top 1988/89's record high, the Soviet Union is expected to be the top buyer of U.S. corn for the second consecutive year. Largely due to lower prices this year, the value of U.S. sales will diminish from a year ago. Corn likely will account for nearly all U.S. feed grain sales this year, as sorghum's price advantage in 1988/89 was largely negated.

The EC's share of Soviet feed grain imports in 1989/90 is estimated to be about the same as last year's 13 percent, reflecting Soviet preference for competitively priced corn, as well as Canada's reentry into the Soviet barley market this year. Following a drought-related reduction in barley exports last year, Canada's share of Soviet feed grain purchases this year is estimated at the highest since 1986/87, about 4 percent. The Argentine portion of the market in 1989/90 should remain at about last year's 3 percent, because of another poor crop. Chinese corn exports are estimated to fall within the recent 1- to 2-million ton annual average. [Christian J. Foster]

New Trade Environment for Livestock Products

Disruptions in traditional Soviet trade flows with Eastern Europe and disappointing growth in domestic production of meat and milk products have opened new trade opportunities for Western exporters. In 1988, the USSR relied on Eastern Europe for about 75 percent of its 720,000 tons of meat imports. In 1989, Eastern Europe's share declined to roughly 50 percent and could fall further this year. The USSR is running a trade deficit with Hungary, its most important meat supplier. The Hungarians have greatly reduced or halted meat exports to the USSR. Other East European countries, notably Romania, also cut shipments to the USSR. As political and economic changes in the region continue, the USSR has searched out new sources of supply.

Since last fall trade has been initiated with the United States for poultry (80,000 tons), Canada for pork (10,000 tons), Australia for mutton (35,000 tons), and, reportedly, Brazil for poultry. In addition, the USSR is receiving 102,000 tons of meat (roughly equal amounts of pork and beef) as food aid from West Germany this year. In 1988, Western suppliers of meat were limited to France and New Zealand, which, combined, exported just 50,000 tons to the USSR.

If meat exports from Eastern Europe fall to zero, and Soviet meat imports remain in the range of 600,000–700,000 tons, the USSR would need to import roughly half a million tons a year from Western countries (with potentially 200,000 tons or more of poultry). The USSR has bought bargain meat and is expected to do so in the future. Most recently consummated meat deals with the West have fallen in the range of \$750–1,100 per ton.

Eventually, trade relations with Eastern Europe are likely to settle on the basis of world prices and hard currency payments, and a revival of East European meat exports to the USSR is possible. The size of total Soviet meat imports may increase, though. Policymakers in the USSR are beginning to debate the potential advantages of substituting meat imports for grain imports. In comparison with world market prices, Soviet domestic prices subsidize meat producers more than grain producers. As the USSR moves toward greater integration with the world economy, a substitution of meat for grain imports is, therefore, expected to become a more attractive option.

Sources of Soviet butter imports are also shifting. In 1988, the EC supplied 340,000 tons, over 75 percent. According to USSR statistics, the EC butter was traded at roughly \$525–550 per ton. In 1989, Soviet imports of butter from the EC dropped by about 200,000 tons as a result of declining excess supplies within the EC. Last fall an agreement was signed with the United States to import 50,000 tons of butter in early 1990. The relatively high

world price for butter of \$1,600, or more, per ton will likely keep the USSR from fully replacing the lost EC supplies.

Modest Growth in Livestock Production in 1990

Even if State and collective farms feed the grain they retained this year, 1990 livestock production may increase by only about half as much as the 2.3-percent annual average of the last 5 years (table 26). This is well short of

Table 26--Livestock sector and feed supply measures, USSR

Category	1985	1986	1987	1988	1989	1990
Percent						
Livestock sector growth						
Official Soviet 1/	1.0	4.7	1.2	4.1	NA	NA
CPE Branch 2/	-0.5	6.5	0.4	4.5	0.9	1.2
Feed supplies 3/	0.9	2.9	1.0	4.0	-1.0	1.2

1/ Gross value of livestock production in 1983 prices, as reported in *Narodnoe khozyaistvo SSSR*.

2/ Estimated by the CPE Branch based on meat output by type, production of eggs, milk, and wool, and inventory changes in estimated 1986 prices. 3/ July-June years. 1984/85 feed supplies are listed under 1985, etc. From table 17.

the roughly 5–6 percent growth necessary to limit further increases in excess demand for these products at the retail level. In addition to continued problems with feed quality, two obstacles holding back more rapid growth this year are inefficiencies that will result from worsening interregional and interbranch linkages, and the need to halt or reverse the 3-year drawdown in cattle inventories.

Meat production is expected to increase by about 1 percent in 1990. Further drawdowns in cattle numbers this year are not anticipated, which will make increases in beef production smaller than in the last four years (table 27). Greater grain feeding on State and collective farms is expected to boost pork production slightly this year. Poultry meat production has the largest trend growth rate of the major meats. Problems with mixed feed production will affect poultry meat expansion in 1990. Growth will likely be below the 4.2-percent annual growth rate of the last 5 years.

As State and collective farms continue to increase milk yields and reduce milk cow inventories, the need to develop a beef cattle industry becomes more crucial for increased beef production. At present, less than 4 percent of Soviet cattle inventories are beef breeds, and this share has not increased in decades. Development of a real beef cattle industry would entail major structural shifts in

Table 27--January 1 livestock numbers and animal units, USSR

Year	Cattle		Hogs	Sheep	Goats	Horses	Poultry	Total animal units 1/
	Total	Cows						
Million head								
1971	99.2	39.8	67.5	138.0	5.4	7.4	652.7	130.5
1976	111.0	41.9	57.9	141.4	5.7	6.4	734.4	136.5
1981	115.1	43.4	73.4	141.6	5.9	5.6	1,032.4	149.4
1986	120.9	42.9	77.8	140.8	6.5	5.8	1,165.5	156.9
1987	122.1	42.4	79.5	142.2	6.5	5.9	1,174.0	158.3
1988	120.6	42.0	77.4	140.8	6.5	5.9	1,175.0	156.5
1989	119.6	41.8	78.1	140.8	6.6	5.9	1,199.5	156.6
1990	118.3	41.7	78.9	2/ 138.0	2/ 6.5	2/ 5.9	2/ 1,205.0	2/ 155.8

1/ In terms of cows. Conversion ratios as follows: Cattle (other than cows) 0.6; hogs 0.3; sheep and goats 0.1; horses 1.0; and poultry 0.02. 2/ Estimate.

agriculture, probably including a diversion of marginal grain areas in the New Lands to grazing use.⁸¹

Milk production is expected to maintain last year's growth of slightly over 1 percent in 1990 (table 28). The lack of improvement in roughage feeds will keep growth from being more robust. Resources are now concentrated on improving milk processing rather than raw milk production, which makes sense given the large amount of milk and milk byproducts that are currently wasted or fed to livestock.

Egg production declined in 1989 for the first time in 13 years. Concerns over possible salmonella poisoning led to the decline, and are expected to keep production from rebounding much in 1990. Soviet per capita consumption of eggs is higher than U.S. levels.⁸²

More Grain Feeding

State and collective farms retained unusually large amounts of grain from last year's harvest for their own use. As inflationary tendencies in the economy persist, the declining value of the ruble as a means of exchange has contributed to farms retaining grain. The administrative apparatus at the oblast' and republic levels is also disinterested in promoting grain sales, because virtually all grain purchased enters the All-Union Fund and is controlled by Moscow.

The vast majority of marketed livestock products do not enter the All-Union Fund, but remain under control of the republics, so there is incentive to retain grain for feeding. The increase in republic-level economic autonomy in the last 2 years has made this process more pronounced.

Table 28--Production of principal livestock products, USSR

Year	Total	Meat 1/				Milk	Wool 2/	Eggs
		Beef and veal	Pork	Mutton, lamb, and goat	Poultry			
1,000 metric tons								
1966-70 average	11,583	5,187	4,327	992	853	224	80,553	NA
1971-75 average	14,004	5,985	5,394	972	1,335	318	87,446	425
1976-80 average 3/	14,843	6,827	5,009	882	1,835	290	92,662	442
1981-85 average	16,226	6,973	5,606	838	2,555	252	94,579	457
1986	18,057	7,840	6,065	894	2,988	270	102,173	469
1987	18,895	8,288	6,324	905	3,126	252	103,774	461
1988	19,680	NA	NA	NA	NA	NA	106,754	478
1989 4/	20,000	NA	NA	NA	NA	NA	108,100	474

1/ Carcass weight, including fat. 2/ Physical weight. 3/ Revision based on the average published in *Narodnoe khozyaistvo SSSR v 1982*. Is not consistent with average derived from last published figures for each year.

4/ Preliminary.

Increases in payment-in-kind of grain to farmworkers (for feeding livestock held on private plots) also increased this year. Because of inadequate on-farm storage, the feed balances presented here reflect the assumption that most of the extra grain retained on farms will be fed this year.

Disruptions in the traditional flow of grain through the system may be having a disproportionate impact on certain types of livestock producers. The State relies on procurements of grain from State and collective farms, along with grain imports, primarily for State flour milling and mixed feed production. The reluctance of Soviet farms to sell grain has forced the State to increase imports or reduce output of flour and feeds. The State has chosen not to fully compensate for the declines from domestic producers with imports. Because bread availability remains the top priority, State production of mixed feeds has been cut in 1989/90 by an estimated 7-8 percent.

Large-scale livestock complexes for poultry and hogs built in the last 25 years are almost entirely dependent on off-farm purchases of feed, particularly State mixed feed. Though feed supplies for the country as a whole, particularly grain supplies, are larger than last year, these farms are in danger of suffering feed shortages. According to official data, these complexes are more efficient feeders than average State and collective farms (table 29).

Table 29--Livestock production by industrial complexes and feed conversion coefficients, 1987, USSR

Category	Share of total Production	Conversion coefficients	
		Complexes	All farms
Pork	21	6.0	8.1
Beef	4	8.7	13.0
Poultry	61	3.7	NA
Milk	5	1.34	1.48

NA = Not available.

Sources: *Vestnik statistiki*, No. 10, (1988), pp. 55-57, *Ptitsevodstvo*, No. 1, (1989), p. 2; and *Vestnik agropromy*, No. 40, (1988), p. 3.

Because farms which have retained extra grain this year do not have adequate access to protein feeds to be as efficient as the complexes, and do not have adequate on-farm storage, higher than usual loss rates of grain for feed may result. This situation is not expected to change significantly in 1990/91.

Feed production from sown roughage crops (hay, haylage, silage, etc.) is as important as grain in terms of its contribution to overall feed energy supplies. In 1989, feed production from this source was unchanged from 1988, and actually lower than the amount produced in 1987 (table 30). The trend in production of feed from sown roughage crops is a function of the trend in fertilizer use. Fertilizer use on roughage crops may have fallen, as

Table 30--Feed supplies by type in oat-unit equivalent, January 1 standard animal units, and feed per standard animal unit, USSR

Units	1986/87	1987/88	1988/89	1/	1989/90
Million metric tons					
Total feed	445.6	463.4	458.6	463.9	
Coarse 2/	94.1	98.9	98.7	96.8	
Pasture	63.4	61.3	61.2	61.2	
Succulents 3/	106.5	117.6	108.1	113.5	
Concentrates 4/	181.7	185.6	190.5	192.5	
Million units					
January 1 total animal units 5/	158.3	156.5	156.6	155.8	
Tons					
Feed per standard animal unit	2.81	2.96	2.93	2.98	

1/ Preliminary. Totals may not add because of rounding. 2/ Includes hay, haylage, and straw. 3/ Includes silage, green chop, potatoes, feed roots, melons, and beet pulp. 4/ Includes grain, millfeeds, oilmeal, fish and animal meal, grass meal, feed yeasts, and whole and skim milk. 5/ In terms of cows, conversion ratios as follows: Cattle (other than cows) 0.6, hogs 0.3, total sheep and goats 0.1, horses 1.0, and poultry 0.02.

subsidies were eliminated in 1988 and 1989, and deliveries to farms declined. Sown roughage crops account for nearly one-quarter of Soviet fertilizer use, so it is likely they receive less fertilizer than in the past. Without improvements in fertilizer quality, the prospects for expansion in sown roughage crop production are probably worse in 1990 than they were 3-4 years ago.

Feed Quality Problems Remain

The quality of roughage feeds remains generally low by American standards (e.g. moisture content of silage is too high and nutrients in roughage feeds are frequently not well preserved). There has been only modest improvement since 1983.⁸³ Failure to improve roughage feeds is a major reason farms in the USSR have resorted to increased grain feeding to boost animal productivity.

Despite increased imports of soybean meal since 1985, livestock rations in the USSR remain persistently deficient in protein. Soviet livestock scientists continue to estimate that deficiency as 5-6 million tons of protein, or 10-15 million tons of soybean meal equivalent.⁸⁴ Lack of protein results in waste of available energy in Soviet livestock rations. However, the logic of increasing protein feed imports at the expense of grain imports, while acknowledged by many agriculturalists, apparently continues to escape Soviet decisionmakers.

The protein shortage remains particularly acute in the mixed feed industry. Oilseed meal accounts for only a

miserly 5.3 percent of mixed feed ingredients, compared to over 20 percent in most Western countries.⁸⁵ Only 35 percent of Soviet mixed feeds meet nutritional specifications, in large part due to lack of protein. State mixed feed producers have little incentive to improve the quality of their products, because State administrators (rather than the mixed feed users) determine how and what they produce. Because of State-set ingredient prices, mixed feed producers actually have an incentive to avoid greater use of oilseed meal in their products.⁸⁶ Poor quality of mixed feeds is another reason State and collective farms retain grain instead of selling it to the Government.



How Reliable are Soviet Meat Production Statistics?

Given available evidence, there is reason to suspect that Soviet meat production, particularly since 1986, may contain some significant double counting. This may be taking place under new contracting arrangements among private sector, State and collective farms, and consumer cooperatives. Existing rules allow consumer cooperatives to purchase and market meat from State and collective farms or the household plots on those farms. State and collective farms are then entitled to attribute these sales toward satisfying their sales plan to the State. A recent article indicates that some meat marketed in this manner is being counted twice, once as sales to the State, and again as sales through cooperatives directly to the population.⁸⁷

Double counting could also occur when household plots and the parent State or collective farms share in fattening animals under a contract arrangement. The parent farm might claim all production, while the share of fattening that occurred on the private plot is later attributed to private plot production as well.

The data indicate a much more rapid increase since 1985 in meat production than in animal inventories or available feed supplies (table 31). Data on animals slaughtered are

Table 31--Meat production, animal inventories, and feed supplies, USSR

Categories	1985	1986	1987	1988	1989
1985 = 100					
Meat production	100	105	110	115	117
Animal inventories 1/	100	100	101	100	100
Animals slaughtered 2/	100	102	106	NA	NA
Feed supplies					
Soviet series 3/	100	102	102	102	NA
ERS series 4/	100	103	104	108	107

NA = Not available.

1/ Beginning year in standard animal units using the following coefficients: cows 1.0, other cattle 0.6, hogs 0.3, sheep and goat 0.1, and poultry 0.02.

2/ The sum of cattle, hogs, sheep and goats slaughtered in standard animal units (all cattle equal 1.0). 3/ Official calendar year Soviet data in oat-unit equivalents. 4/ ERS estimates for July-June split years in oat unit equivalent.

not available beyond 1987, though improvements in birthing rates may have allowed further increases in 1988 and 1989. Rate of gain per animal may also have improved substantially. Given relatively slow growth in feed supplies and little feed quality improvement during this period, factors other than feed availability must be responsible for much of the increase in meat production. The extent to which double counting might exist in meat production data remains open to question and can only be clarified by more information.

Demand for Meat and Milk Products Racing Ahead

Despite increases in livestock production in recent years (possibly less than those officially claimed), the situation in retail markets for meat and milk products deteriorated further in 1989. The main reasons are clear. Average incomes increased 12 percent. Retail prices for meat in farmers' markets reportedly increased by 6-8 percent.⁸⁸ Prices in the State retail network (where prices are administratively set and most meat is purchased) could have increased through product reclassification, but probably rose much less than those in the farmers' market. The result was further growth of excess demand for these goods.

Given current income and retail price policies, supply increases must be much larger than those recorded recently, or anticipated for 1990, for this situation to change. Given already large retail price subsidies for meat and milk, and the declining internal convertibility of the ruble, the State is reluctant to attempt to use higher producer prices as a

substantial supply-side lever. Instead, emphasis rests squarely on shifting out the supply curves for these goods. The chances of reversing growth in excess demand through this means alone are highly unlikely. A change in demand-side policies, such as strict limitations on money income growth, and/or substantial retail price increases, appears essential for any improvement in the situation.

Per capita consumption of meat and milk continue to increase. Consumption of eggs exceeds the norms for 1990, while milk and meat consumption are close to the norms (table 32). Given trends on retail markets, these targets are increasingly irrelevant. [Edward C. Cook]

Table 32--Consumption norms of selected food products and per capita consumption, USSR

Year	Meat and fat	Fish and fish products	Milk and milk products 1/	Eggs 2/	Sugar	Vegetable oil	Potatoes	Grain 3/	Vegetables and melons	Fruit and berries
Kilograms										
1950	26	7.0	172	60	11.6	2.7	241	172	51	11
1960	40	9.9	240	118	28.0	5.3	143	164	70	22
1970	48	15.4	307	159	38.8	6.8	130	149	82	35
1980	58	17.6	314	239	44.4	8.8	109	138	97	38
1985	62	18.0	325	260	42.2	9.7	104	133	102	48
1986	62	18.6	333	268	44.0	9.8	107	132	102	56
1987	64	18.0	341	272	47.2	10.0	105	132	100	55
1988	66	17.6	356	275	46.8	10.1	99	131	101	55
1989 4/	67	17.3	359	270	47	10.3	100	131	100	53
1990 con- sumption norm 5/	70	18.2	360	265	35.3	13.2	105	115	140	75

1/ Including milk equivalent of butter. 2/ Number. 3/ Flour equivalent. 4/ ERS estimate except for meat, milk and eggs. 5/ Agropromyshlennyi komplex SSSR, Goskomstat (1990), p. 99.

Need for Imported Protein Feed

The USSR's dependence on oilseed and meal imports is unlikely to diminish in 1990/91 (October-September), even if total 1990 oilseed output surpasses 1989's record production of over 13 million tons (table 33). Growth in Soviet oilseed production in the 1990's will likely result primarily from higher yielding sunflowerseed crops, and expansion of area sown to rapeseed and soybeans.

Despite continued growth in domestic oilseed and products production, the USSR remains far short of its protein meal and vegetable oil requirements. The gap in Soviet oilseed and product supplies is unlikely to be closed, at least during the first half of the 1990's, as domestic meal and oil output will grow only slowly and the top priority continues to be placed on satisfying rising consumer expectations. Most immediately, this equates to raising per capita consumption of vegetable oil and meat products, with the latter attained through increased use of soybean meal in livestock rations.

Despite currently inadequate supplies of protein meal and vegetable oil, and continued slow growth in domestic oilseed production, Soviet planners continue to press for self-sufficiency, recalling earlier plans for oilseed output to

Table 33--Oilseed production, USSR 1/

Year	Sun- flower seed	Cotton- seed	Soy- bean	Rape- seed	Other	Total
1,000 metric tons						
Averages						
1971-75	5,974	4,349	471	8	234	11,036
1976-80	5,309	4,656	529	13	193	10,700
1981-85	4,974	4,936	505	55	171	10,641
1986	5,272	4,870	703	110	157	11,112
1987	6,075	4,485	712	296	163	11,724
1988	6,157	4,870	880	420	176	12,503
1989 2/	7,000	4,850	920	510	175	13,455

NA= Not available.

1/ Cottonseed is USDA estimate; other does not include oilseeds from fiber flax and hemp; and total is an estimate. 2/ USDA estimates except for total.

reach about 16 million tons (including cottonseed) by the end of this year.⁸⁹ According to a senior economist with the State planning agency, the USSR has all the necessary conditions to produce up to 20 million tons of oilseeds annually, which would reportedly allow it to close the vegetable oil gap and produce about 10-15 million tons of oilmeal per year.⁹⁰ This goal, however, likely remains out of reach for the foreseeable future, as it entails

sunflowerseed output to rise to about 9 million tons (up nearly 30 percent from 1989), soybean production to reach 2.5 million tons (up about 170 percent from 1989), rapeseed output to nearly triple to 1.5 million, and cottonseed to rise by about 20 percent.

Near-term increases in oilseed output will likely arise from:

- marginal expansion of sunflowerseed area to perhaps 4.5–4.7 million hectares (about the level in the second half of the 1970's), combined with improved, higher yielding seed varieties;
- further growth in rapeseed area and recovery of yields, and
- slow growth in soybean area accompanied by marginal increases in yields.

According to an optimistic Soviet report, soybean area is likely to double to almost 2 million hectares only by the end of the next decade, and then only through the increased use of soybeans in crop rotations in the Ukraine, Kazakhstan, the Volga Valley and Moldavia.⁹¹ Little if any growth is forecast for cottonseed yields in the near-term and area should decline.

Combined Soviet imports of soybeans and soybean meal in 1989/90 (October–September) could be up for the fifth consecutive year, nearing a record 5 million tons (in soybean meal equivalent) (fig. 14). Weakened soy prices

Possible record Argentine soy sales in 1989/90, over 50 percent larger than U.S. exports, will keep the U.S. share of total Soviet soy imports close to its roughly one-third share in 1988/89 (table 34). Argentina's portion should be

Table 34--U.S. soybean and soybean meal exports to the USSR 1/

Year	Soybeans	Soybean meal 2/
	1,000 tons	
1976/77	889	--
1977/78	805	--
1978/79	1,187	27
1979/80	807	--
1980/81	--	--
1981/82	710	--
1982/83	199	--
1983/84	416	--
1984/85	--	--
1985/86	1,519	--
1986/87	68	--
1987/88	831	1,320
1988/89	299	1,349
1989/90 3/	342	1,197

1/ October-September marketing year. 2/ To convert to soybean equivalent, divide by 0.795. 3/ As of May 15, 1990.

Source: U.S. Export Sales.

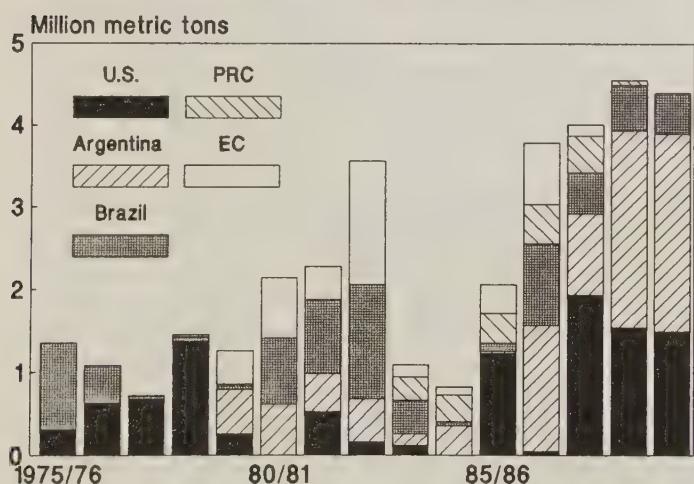
about equal to its approximately 50-percent share the year before. Argentina's slightly larger crop, lower export prices, higher bean protein content, and pelletized meal may largely account for its large share of the Soviet market.

Preference for Soybean Meal Imports

Soviet preference for importing soybean meal over raw soybeans appears to have strengthened in the last few years. Inadequate, outdated processing and handling facilities for oilseeds, and concern about the timeliness and control of meal deliveries to State mixed feed enterprises, could account for the inclination for buying meal over beans.

Total imports of soybean meal in 1989/90 (October–September) are estimated at a near record 3.9 million tons; but, the protein meal deficit remains large (fig. 15). Domestic production of oilseed meal in 1990 is forecast to be up about 4 percent from 1989's nearly 5 million tons, in soybean meal equivalent. Increased oilseed output in 1989, and slightly larger imports expected in 1989/90, should account for the rise. However, domestic output will still fall well short of filling the country's feed protein deficit, estimated by the Soviets at about 5–6 million tons of digestible protein (about 10–15 million tons in soybean meal equivalent).⁹²

Figure 14
USSR Soybean and Soybean Meal Imports*



*Soybean meal equivalent; estimates for October–September.

in 1989/90 are likely to contribute to heavy Soviet demand this year. Continued Soviet purchases of cheaply priced tapioca from Thailand in 1990 should further strengthen demand for protein feeds, as low-protein tapioca requires large protein supplements for use as feed.

Figure 15
USSR Soybean Meal Imports (Oct./Sept.)

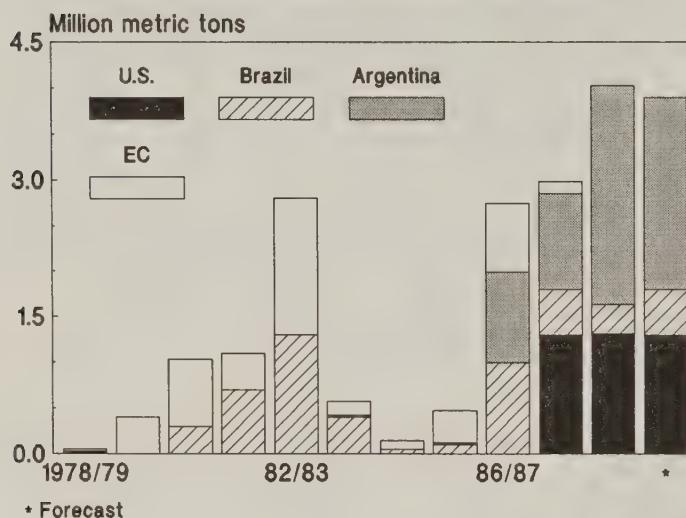
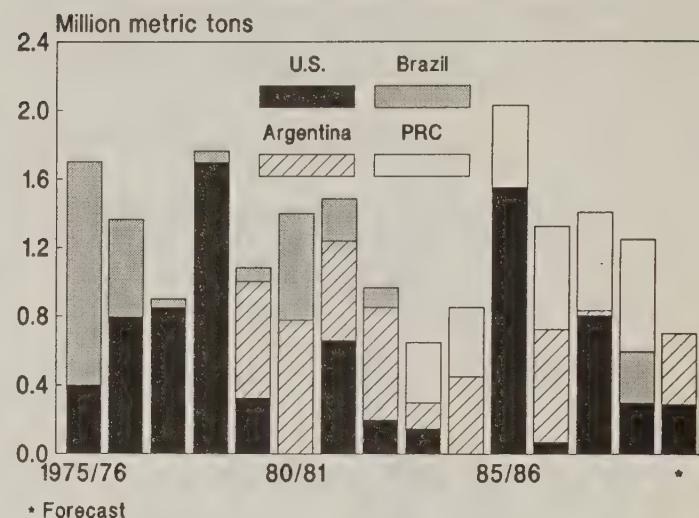


Figure 16
USSR Soybean Imports (Oct./Sept.)



Oilseed meal currently comprises only about 5 percent of the total contents of mixed feeds, according to Soviet officials,⁹³ far short of levels deemed effective in most Western countries. Furthermore, the protein deficient nature of Soviet mixed feeds reportedly leads to overfeeding about 25 million tons of grain per year, according to Soviet authorities. Debate in the USSR concerning the economic rationale and feasibility of importing larger volumes of soybean meal, instead of continued massive imports of feed grains, continues to grow.

With near record soybean meal sales, Argentina should maintain the largest share of the Soviet soybean meal market, at nearly 55 percent. The United States is forecast to largely maintain its one-third share from last year, but it still is down from 1987/88's 45-percent share. Brazil should, at least, partly regain its 1987/88 portion of the market from 1988/89's 8 percent.

Soviet soybean imports in 1989/90 should increase slightly from 1988/89's estimate of just over 650,000 tons, but will remain below the 1–2 million tons purchased annually during 1985/86–1987/88 (fig. 16). The U.S. share of 1989/90 Soviet soybean imports is forecast to decline again for the second year, to about 40 percent. Argentina, which may have a record crop, could increase its estimated sales in 1989/90 to the highest level in 3 years. It could raise its sales share to over 60 percent in 1989/90. Brazil and the

PRC are not forecast to make any significant sales to the USSR this year due to smaller crops in 1989/90.

Vegetable Oil Imports

The Soviets are forecast to further increase their vegetable oil imports in 1989/90 from 1988/89's almost 900,000 tons. This is expected despite higher 1990 domestic vegetable oil output—up from last year's record high estimated at 3.2 million tons—as a result of larger raw material supplies. Even with growth in output, domestic oil production is not likely to reach the Food Program target of 4.3 million tons in 1990.⁹⁴ Furthermore, while vegetable oil consumption in 1990 could reach as high as 10.5 kilograms per capita, it would still fall far short of the 1990 per capita norm of 13.2 kilograms. The planned increase in oil consumption is to take the form of increased output of margarine products and mayonnaise.

Palm oil, the cheapest oil, comprises the majority of the import estimate, with sunflowerseed and soybean oil in second and third place. While the United States has sold the USSR butter this year, it has not concluded any sales of vegetable oil, which the Soviets claim is not price competitive. Attempts by the U.S. vegetable oil industry to persuade the USDA to announce EEP bonuses for vegetable oil sales to the Soviet Union have failed twice this year. [Christian J. Foster]

Sugar Imports Could Fall

The Soviet sugar import bill could fall some in 1990, because of lower import volumes following the large 1989 domestic sugarbeet harvest and also possibly due to less and lower priced imports from Cuba (table 35). In the first quarter of 1990, raw sugar imports were down 32 percent from the first quarter of 1989. The quantity of raw sugar imports was up almost 25 percent in 1989, but the value of raw sugar imports fell. Spending for imported sugar was less than for grain imports for the first time since 1985. Raw sugar's share of total sugar imports declined to less than 95 percent. Imports of raw sugar in the first 9 months of 1989 were up 20 percent, while imports of refined sugar were up 130 percent.

Cuba's raw sugar exports to the USSR in 1989 may have been up about 20 percent from 1988's 7-year low.⁹⁵ The Soviets subsidize Cuba through trade. According to 1988 Soviet official statistics, the USSR paid Cuba seven times more per ton for sugar than it paid other sources. However, Soviet statistics also show that the USSR charges Cuba high prices for oil. In reality, the USSR usually pays Cuba with 2-3 times more oil than Cuba could buy on the world market with its sugar export earnings. The 20-percent decline in 1989 unit values of Soviet sugar imports may indicate that the Soviets are trying to cut their subsidy to Cuba. Australia should be guaranteed a 6-percent market share because of the pact to supply the Soviets 300,000 tons of raw sugar per year from July 1990 through June 1995. In recent years, other raw sugar suppliers include Mexico and Brazil.

Record Sugarbeet Crop

Total sugar supplies in 1989 approached the 1987 record, and the Soviets may try to maintain similar supplies in

1990. The high use of sugar for moonshine production caused by the campaign against alcohol, combined with 1988's 12-percent decline in sugar supplies, led to panic consumer buying. Despite the 10-percent increase in supplies in 1989, rationing remains in effect in most areas.

The largest Soviet sugarbeet crop since 1976 plus increased sugar imports, were the reasons for the large 1989 supplies (table 36). Soviet programs to increase farm incentives and improve farming practices may be having a positive effect on raising farm production and productivity, which could help maintain production in 1990. Despite reports of some weather problems during the growing and harvesting seasons, 1989 yields were at record levels. Furthermore, 1989 area was the lowest since 1971, and fertilizer use may have declined further (per hectare application fell 13 percent from 1984 to 1988).

Previously, mineral fertilizer applications had increased twice as fast as output, as unbalanced formulations and inappropriate application schedules cut fertilizer effectiveness.⁹⁶ Even with recent improvement, Soviet sugarbeet yields remain little more than half U.S. and West European levels. Furthermore, excess nitrogen content in fields (over 140-160 kilograms per hectare) lowers the beets' sugar content in many producing regions.

Low Extraction Rates

The Soviets could substantially increase sugar production from domestic sources if they could raise sugar extraction rates. However, they appear to be making little headway. The State, which operates virtually all processing facilities, purchased 91.9 million tons of sugarbeets in 1989, up 18 percent from 1988. Yet refined sugar production from sugarbeets was up only 7 percent. The 1989 refined sugar extraction rate from sugarbeets apparently may be about 10

Table 35--Sugar production and trade, USSR 1/

Year	Industrial production		Imports			Exports refined
	Total	Of which from beets	Total	Raw From Cuba	Refined	
1,000 metric tons						
1966-70 average	10,203	8,638	2,082	2,081	2	1,097
1971-75 average	9,694	7,771	2,154	1,812	82	249
1976-80 average	10,854	7,370	3,845	3,374	439	139
1981-85 average	11,644	7,240	4,885	3,495	827	184
1986	12,729	8,000	5,158	3,861	23	301
1987	13,680	8,800	5,035	3,750	20	159
1988	12,056	8,200	4,094	3,004	127	213
1989	13,300	8,800	5,000	2/ 3,700	2/ 300	2/ 200

1/ Official Soviet calendar year data (except where noted), refined basis except raw imports. The factor for converting raw to refined is 0.92. 2/ Estimates.

Table 36--Area, yield, and production of selected crops, USSR

Year	Seed cotton	Sugar-beets	Sunflower-seed	Fiber flax 1/	Potatoes	Vegetables	Fruit, berries, grapes
1,000 hectares							
Area							
1966-70 average	2,527	3,582	4,837	1,341	8,238	1,440	2,626
1971-75 average	2,810	3,527	4,474	1,234	7,953	1,601	3,304
1976-80 average	3,043	3,745	4,471	1,156	7,020	1,629	3,339
1981-85 average	3,242	3,504	4,142	1,020	6,771	1,710	3,321
1986	3,475	3,399	3,848	975	6,373	1,698	3,167
1987	3,527	3,404	4,156	971	6,239	1,713	3,123
1988	3,432	3,370	4,280	931	6,079	1,726	3,120
1989	3,333	3,323	4,400	874	5,988	1,682	NA
Metric tons per hectare							
Yield 2/							
1966-70 average	2.41	22.8	1.32	0.34	11.5	13.2	3.7
1971-75 average	2.73	21.7	1.34	0.37	11.3	13.7	3.7
1976-80 average	2.81	23.6	1.19	0.34	11.8	15.2	4.5
1981-85 average	2.56	21.8	1.20	0.37	11.5	16.1	5.4
1986	2.37	23.3	1.37	0.38	13.7	16.4	5.8
1987	2.29	26.6	1.47	0.45	12.1	15.9	4.6
1988	2.53	26.1	1.43	0.35	10.3	15.7	4.8
1989	2.57	29.3	1.59	NA	12.0	19.9	NA
1,000 metric tons							
Production							
1966-70 average	6,099	81,118	6,389	458	94,813	19,472	9,710
1971-75 average	7,667	75,984	5,974	456	89,782	22,974	12,381
1976-80 average	8,547	88,732	5,309	393	82,571	26,313	15,176
1981-85 average	8,314	76,379	4,974	377	78,351	29,226	17,807
1986	8,234	79,272	5,272	366	87,186	29,783	18,338
1987	8,084	90,689	6,075	433	75,908	29,249	14,321
1988	8,689	87,855	6,157	323	62,705	29,330	14,938
1989	8,566	97,500	7,000	NA	72,000	33,500	14,800

NA = Not available. 1/ Flax grown for fiber production. 2/ Soviet reported yields vary from calculated yields in some instances.

percent, the lowest in decades. Soviet yield from refining raw cane sugar imports apparently also is lower than for the United States or West European countries.

Transportation and processing inadequacies continue to block improvements in extraction rates. According to Soviets scientists, the equivalent of 4 million tons of 1989's sugarbeet harvest were lost because Soviet refineries' extraction rates were 10-10.5 percent versus 14.5-15 percent in the West, and even though the sugar content of beets in both areas was 16-17 percent.⁹⁷ In November 1989, sugarbeet refineries in the Ukraine accumulated more than 1.3 million tons of sugar which could not be moved because of the lack of rail cars. Sixty refineries (out of 200) were forced to store sugar on tarpaulin sheets in the open fields.⁹⁸

In the Ukraine, which produces two-thirds of all domestic sugar, 140 refineries were built before 1917. Reequipping and construction projects are drawn out. Only a quarter of the planned 102-ton daily increase in sugar production has been realized in the last 4 years. While overall investment in agricultural product processing is supposedly being increased, the 1986-90 target for refinery construction has already been cut 54 percent in the Russian Republic. Only 10 percent of the 385 million rubles allocated for major repairs and new construction during 1986-90 was spent, as of the end of 1989.⁹⁹ Commissioning of new sugarbeet processing capacities in 1989 reached only 62 percent of plan. Slow improvement in sugar processing capability will mean the Soviets may meet their 1990 goal for 11-11.4 tons of sugar from domestic sugarbeets only by the year 2000. [Yuri Markish and Kathryn Zeimetz]

Cotton Exports May Fall Substantially

The Soviets are insignificant exporters in the world agricultural commodity markets, except in cotton trade (table 37). However, in calendar 1990, Soviet cotton

Table 37--Agricultural exports, by value, USSR

Commodity	1986	1987	1988
\$ Millions 1/			
Wheat	133.1	145.1	166.4
Barley	3.5	2.6	4.2
Corn	18.0	17.6	38.3
Oats	1.5	0.8	2.1
Rye	0.8	2.0	2.2
Rice	12.4	17.2	4.3
Flour-milling products and pulses	160.9	136.7	106.6
Subtotal	330.2	322.0	324.1
Meat and products	47.9	58.3	56.0
Milk and products	48.2	55.4	55.8
Animal fats including butter	79.0	96.1	85.0
Wool	45.4	43.0	35.2
Furs	145.3	226.6	169.2
Raw hides	64.9	130.8	219.5
Vegetables, fruit, and nuts	47.2	77.1	80.7
Sugar, refined	82.1	48.4	69.9
Confectioneries	8.5	9.4	9.3
Beverages	176.4	199.7	209.0
Tobacco products	6.5	6.6	6.2
Oilseed, tobacco, and other raw materials	51.2	41.2	41.2
Natural fibers	1,174.2	1,442.9	1,479.3
Vegetable oils	75.7	68.8	84.9
Technical fats and oils	2.9	5.0	18.7
Seeds and planting materials	42.6	42.7	42.9
Total	2,428.2	2,873.8	2,986.9

1/ USSR official data converted at \$1.42 in 1986, \$1.58 in 1987, and \$1.65 in 1988.

exports could drop to their lowest level since their peak of 972,000 tons in 1977. In the fall of 1989, light industry officials asked State planning officials to cut cotton exports in 1990 by 100,000 tons.¹⁰⁰ Exports in the first half of the 1990's could drop to early 1970 levels. The decline in exports may result as the Soviets drastically cut cotton area. Cotton area in Uzbekistan, which accounts for over 60 percent of cotton output, is to be cut 30 percent by the year 2000.¹⁰¹ Exports in 1989 increased following 1988's near-record lint output (table 38).

The State continues to purchase all cotton output at Government-established prices and to allocate output to mills or export. Cotton producers are seeking the right to

retain some of their production for sale at contract prices to domestic and foreign users. Certain cotton processing enterprises have begun to export cloth, rather than supplying the Soviet cotton foreign trade organization.

East European countries will likely be most affected by the cut in USSR cotton exports. Most Soviet lint goes to socialist countries (in 1983-87, 65 percent went to East European and 15 percent to other socialist countries) under, essentially, barter arrangements. The EC (primarily France) and Japan have occasionally been mentionable customers. A late 1989 report indicated January-March 1990 shipments to Japan would be halted.

USSR cotton imports are much smaller than exports and generally involve better quality fiber. Imports fell 14 percent in 1989. Syria has been the most consistent supplier, but Egypt has shipped very fine quality cotton in a number of years. The United States captured a sizeable part of the Soviet import market in the few years it sold cotton to the USSR. China emerged as a major supplier in 1986 and 1987, though probably of lower quality cotton. The Soviets have not reported 1989 output of fine-fibered lint. However, output of quality cotton could have fallen, as output declined in the republics producing quality cotton and mechanical harvesting increased. Hard currency requirements for other goods could limit cotton imports, however.

Light industry's request for a larger share of domestic production may be due to several factors. The Soviets are trying to substantially increase output of consumer goods, production of lint cotton decreased in 1989, and the output of synthetics may be falling. Synthetic fiber production in 1988 declined 2 percent from 1987.

Table 38--Lint cotton production and trade, USSR 1/

Year	Production	Imports	Exports	Domestic supplies 2/
1,000 metric tons				
1980/81	2,700	22	916	1,806
1981/82	2,402	26	949	1,479
1982/83	2,312	177	774	1,715
1983/84	2,172	166	642	1,696
1984/85	2,597	187	659	2,125
1985/86	2,782	88	713	2,157
1986/87	2,660	75	783	1,952
1987/88	2,502	90	731	1,861
1988/89	2,748	77	791	2,034

1/ USSR published data, except ERS production estimates for 1981-84 based on USSR 1987 data of 2,453-million-ton average for 1981-85. Calendar year trade beginning with 1981 data for 1980/81. 2/ Production minus net exports.

Substantial Area Declines

The Soviets increased producer cotton prices substantially in 1989 (perhaps 10 percent), and further increases will take effect in 1990 (perhaps another 10 percent). The Government is raising prices less for a supply response than as a means of channeling resources into Soviet Central Asia. Improving conditions in this extremely poor area may help to head off social unrest.

Previously, price increases were associated with a policy to increase area as well as production. However, this time, while increasing prices substantially, the Government is trying to reduce cotton area—retrenching from public sector monoculture and allocating more land to public and private feed, fruit, and vegetable production. Cotton makes up 75 percent of the sowings, instead of the optimal 55 percent. On many fields, cotton has been cultivated without change for more than 25 years, which has led to deep soil exhaustion and massive spread of harmful weeds, pests, and diseases, especially cotton wilt.¹⁰²

Uzbekistan, which produces 60 percent of Soviet cotton, illustrates the Soviet relaxed priority on cotton output. About 200,000 hectares (5 percent of Uzbek cultivated land) are now in private use, and the optimistic goal is to increase this by 200,000–250,000 hectares by 1991.¹⁰³ Further evidence that the program is aimed less at increasing output is that the Uzbek goal for cotton fiber output in 1990 and following years has been set at 1.5 million tons. This is 215,000 tons less than for 1988 and translates into a seedcotton decline of 0.6–0.7 million tons.¹⁰⁴

Soviet cotton area may decline almost 10 percent in 1990, if the 15-percent decline in Uzbekistan is effected, with land allocated to private plots and to feed crops and orchards within farms.¹⁰⁵ The full area decline may be hard to realize if managers of the State and collective farms, attracted by the higher cotton prices, do not divert the farms' cotton land to feed and horticultural crops. Workers may maintain pressure on farm managers to allocate land to private plots, where the workers produce feeds, fruits, and vegetables. Decreasing domestic convertibility of the ruble is increasing the importance of goods which can be bartered more freely, versus a commodity, such as cotton, which can only be sold to the State processing monopoly.

The area decline should not lead to a proportional decline in production, as poorer lands may be assigned to the intensive ministrations of private plot holders. Also, an analysis of farm prices and yields for cotton for 1972–86 demonstrated a yield-price elasticity of about 0.3. The response might grow in the future because area expansion will be limited by decreased development of new irrigated areas and by diversion of cotton acreage to other uses.

However, the positive yield effect could be muted somewhat, as it was with the recent large increase in wheat prices. Higher prices let farms substantially increase incomes without increasing sales to the State.

Cutbacks in fertilizer use also have not necessarily decreased output by decreasing yields. An analysis of fertilizer use for 1974–88 could establish no relationship with yields. The ineffectiveness of fertilizers likely has reflected poor application of high levels of inappropriately formulated fertilizers. In 1987, Soviet mineral fertilizer use on cotton was 410 kilograms per hectare, versus the approximately 240 kilograms on irrigated cotton land in the United States. Better application of lower amounts of correctly formulated fertilizers could help to raise yields.

The 1989 cotton crop output may provide evidence of the effectiveness of Government programs to concentrate resources (table 39). Area declined almost 3 percent, a little less than planned. Yields increased, despite reports that about a third of the area had to be resown because of widespread flooding after planting. Across most of Central

Table 39--Cotton production, USSR

Republic	1976-80	1981-85	1986	1987	1988	1989	1/
Million hectares							
Area							
USSR	3.043	3.242	3.475	3.527	3.432	3.333	
Uzbekistan	1.823	1.931	2.054	2.108	2.017	1.93	
Turkmenistan	.504	.532	.650	.633	.636	.628	
Tadzhikistan	.295	.308	.313	.324	.320	.310	
Azerbaijan	.231	.297	.300	.303	.299	.300	
Kazakhstan	.117	.130	.129	.128	.128	.130	
Kirgizia	.073	.044	.029	.031	.032	.033	
Million tons							
Seed cotton production							
USSR	8.547	8.314	8.234	8.084	8.689	8.566	
Uzbekistan	5.359	5.159	4.989	4.858	5.365	5.292	
Turkmenistan	1.130	1.142	1.138	1.272	1.341	1.382	
Tadzhikistan	.906	.917	.922	.872	.963	.921	
Azerbaijan	.627	.707	.784	.697	.616	.582	
Kazakhstan	.317	.302	.333	.312	.325	.315	
Kirgizia	.208	.087	.068	.073	.079	.074	
Fine-fiber seed cotton							
USSR	.794	1.088	1.188	1.179	1.334	NA	
Uzbekistan	.301	.494	.584	.531	.561	NA	
Turkmenistan	.225	.304	.295	.372	.444	NA	
Tadzhikistan	.268	.289	.309	.276	.329	NA	
Lint production							
USSR	2.612	2.453	2.660	2.502	2.748	2.662	
Uzbekistan	1.620	1.509	1.622	1.505	1.719	1.673	
Turkmenistan	.338	.335	.354	.380	.402	.400	
Tadzhikistan	.289	.278	.293	.276	.299	.276	
Azerbaijan	.203	.212	.262	.225	.203	.192	
Kazakhstan	.097	.093	.108	.096	.101	.098	
Kirgizia	.065	.026	.021	.020	.024	.023	

1/ Estimates except for USSR total.

Source: *Sel'skoe khozyaistvo SSSR*, 1988, *Vestnik statistiki*, No. 4 (1989), and *Press-Vypusk*, No. 1 (1990).

Asia the vegetation period was shortened by 20–30 days.¹⁰⁶ Fertilizer use likely fell. Yet the Soviet seed cotton harvest was only 1 percent less than the bumper harvest of 1988. In Uzbekistan in 1990, the Soviet goal is to have yields increase 6 percent, versus 1989's 3-percent rise under difficult conditions.

Soviet cotton productivity, however, remains far behind Western levels as Soviet scientists call for improved seed varieties to improve fiber quality and shorten the length of the growing season. All Soviet cotton production is irrigated, yet yields are about 60 percent of those in California and Arizona for upland cotton.

Low ginning rates are one reason for poor Soviet output. Ginning rates for Arizona and California upland cotton average 38–39 percent. According to Soviet estimates, the 1989 rate was 31.1 percent. Although this is down 0.5 percent from 1988, it was accomplished despite much wider use of mechanized harvesting. About 70 percent of the Uzbekistan crop was machine harvested in 1989, versus about 50 percent in 1988. Machine harvesting was also up substantially in Turkmenistan and Tadzhikistan. Declines in seedcotton output and the ginning rate lowered 1989 lint output 3 percent from 1988. [Yuri Markish and Kathryn Zeimetz]

Notes

- ¹*Izvestiya*, 12/14/89, pp. 2–4.
- ²*Ekonomicheskaya gazeta*, No. 44 (1989), p. 7; and *New Times*, No. 6 (1990), p. 35, reported in Foreign Broadcast Information Service (FBIS)—*Daily Report, Soviet Union (SOV)*—90–038, 2/26/90, p. 76.
- ³*Pravitel' stvennyy vestnik*, No. 4 (1990), p. 3, translated in FBIS—*SOV*—90–022, 2/1/90, p. 93.
- ⁴*PlanEcon Report*, Vol. VI, Nos. 7–8 (1990).
- ⁵*Izvestiya*, 1/30/90, p. 1, translated in FBIS—*SOV*—90–022, 2/1/90, p. 95.
- ⁶*Pravitel' stvennyy vestnik*, No. 18 (1989), p. 6, translated in FBIS—*SOV*—89–183, 9/22/89, pp. 83–85.
- ⁷*Pravitel' stvennyy vestnik*, No. 18 (1989), p. 6, translated in FBIS—*SOV*—89–183, 9/22/89, pp. 83–85.
- ⁸*Voprosy ekonomiki*, No. 11 (1989), pp. 129–134.
- ⁹*Wall Street Journal*, 3/6/90, p. 3.
- ¹⁰*Argumenty i fakty*, No. 41 (1989), pp. 1–3.
- ¹¹*Izvestiya*, 12/14/89, pp. 2–4, translated in FBIS—*SOV*—89–239, 12/14/89, p. 44.
- ¹²Edward C. Cook, “Reforming Soviet Agriculture: Problems with Farm Finances and Equity Considerations,” in *Perestroika in the Countryside: Agricultural Reform under Gorbachev*, White Plains, N.Y., M.E. Sharpe, forthcoming July 1990.
- ¹³*Sovetskaya torgovlya*, 1/20/90, pp. 1–2, translated in FBIS—*SOV*—90–025, pp. 106–110.
- ¹⁴*Pravda*, 10/21/89, pp. 1–2, translated in FBIS—*SOV*—89–203, pp. 46–47.
- ¹⁵*Sel'skaya zhizn'*, 1/23/90, p. 3.
- ¹⁶*Vestnik agropromta*, No. 40 (1989), p. 2, and V. Miloserdov, “Sostoyanie i perspektivy razvitiya APK,” *APK: Ekonomika, upravlenie*, No. 10 (1989), pp. 3–17.
- ¹⁷*Sovetskaya Rossiya*, 12/7/89, p. 1.
- ¹⁸Miloserdov, op. cit., *Sel'skaya zhizn'*, 10/12/89, p. 3, and *Yunost'*, No. 10 (1989), pp. 2–4, translated in Joint Publications Research Service (JPRS)—*Soviet Union Economic Affairs (UEA)*—90–001, 1/18/90, pp. 47–51.
- ¹⁹*Sel'skaya zhizn'*, 3/7/90, p. 1 (Land Law), and 3/10/90, p. 1 (Property Law).
- ²⁰*Literaturnaya gazeta*, No. 7 (1990).
- ²¹*Izvestiya*, 2/16/90, p. 2.
- ²²*Sel'skaya zhizn'*, 2/15/90, p. 3.
- ²³This is comparing the 1990 plan with 1989 actual. Reports on the plan have provided comparisons of the 1990 plan with the (unrealized) 1989 plan.
- ²⁴Ye. Ligachev speech text in *Izvestiya*, 12/15/89, Morning edition, p. 10, translated in FBIS—*SOV*—90–026–S, 2/7/90, pp. 1–3.
- ²⁵*Izvestiya Timiryazevskoy sel'skokhozyaystvennoy akademii*, No. 5 (Sep.–Oct. 1989), pp. 3–16, translated in JPRS—*UEA*—90–002, 1/30/90, pp. 30–40.
- ²⁶*APK: Ekonomika, upravlenie*, No. 10 (1989) p. 3.
- ²⁷*Vestnik agropromta*, No. 46–47, 11/17/89.
- ²⁸*Pravda*, 2/11/89, and *Ekonomicheskaya gazeta*, No. 47 (1989).
- ²⁹*Sel'skaya zhizn'*, 9/8/89, p. 4, translated in JPRS—*UEA*—90–002, 1/30/90, pp. 40–41.
- ³⁰*APK: Ekonomika, upravlenie*, No. 11 (1989), pp. 3–14, translated in JPRS—*UEA*—90–003–L, 2/2/90, pp. 1–14.
- ³¹*Vestnik agropromta*, No. 31 (1989).
- ³²USSR Goskomstat, Press Release No. 604, 12/26/89.
- ³³*Sel'skaya zhizn'*, 9/16/89, p. 2, translated in FBIS—*SOV*—89–196, 10/12/89, pp. 82–86.
- ³⁴*Izvestiya*, 1/2/19 and 4/30/89, and *Ekonomicheskaya gazeta*, No. 19 (1989).
- ³⁵*Zashchita rasteniy*, No. 10 (1989), pp. 6–9, translated in JPRS—*UEA*—90–004, pp. 49–53.
- ³⁶Moscow Domestic Service, 1400 GMT, 2/23/90, translated in FBIS—*SOV*—90–038, 2/26/90, p. 50.
- ³⁷*Pravda Ukrayiny*, 2/7/90 and 7/6/89, *Sovetskaya Rossiya*, 6/16/89, *Sotsialisticheskaya industriya*, 9/14/89, and *Pravda*, 7/23/89.
- ³⁸*Pravda*, 1/28/90.
- ³⁹*Sel'skaya pravda*, 8/4/89.
- ⁴⁰M. Lemeshev, *Izmenenie okruzhayushchei sredy pod vliyaniem proizvodstva*, (1988), Moscow: Znanie, p. 40.
- ⁴¹*Ekonomika sel'skokhozyaistvennykh i pererabatyvayushchikh predpriatiy*, No. 5 (1989), p. 3.
- ⁴²*Ekonomicheskaya gazeta*, No. 42 (1989), p. 20, translated in JPRS—*UIA*—89–018, 12/1/89, pp. 16–17.
- ⁴³*Ural'skie nivy*, No. 10 (1989), pp. 46–48, translated in JPRS—*UEA*—89–040, 12/20/89, pp. 19–23.
- ⁴⁴*Ural'skie novi*, No. 11 (1989).
- ⁴⁵*Sel'skaya zhizn'*, 6/21/89, p. 1, translated in JPRS—*UEA*—89–035, 10/31/89, pp. 35–36.
- ⁴⁶Moscow Television Service, in Russian, 2154 GMT, 10/31/89, translated in FBIS—*SOV*—89–210, 11/1/89, p. 60.
- ⁴⁷Vladlen Martynov and Vladimir Morozov, “External Economic Relations in the Agroindustrial Sphere,” *Agrarian Relations under Socialism*, Moscow: USSR Academy of Sciences (1987), pp. 159–160.
- ⁴⁸*Sel'skaya zhizn'*, 6/17/89, p. 5, translated in JPRS—*UEA*—89–024, 7/25/89, pp. 64–66.
- ⁴⁹TASS, in English, 0813 GMT, 6/8/89, reported in FBIS—*SOV*—89–112, 6/13/89, p. 58.
- ⁵⁰TASS in English, 1505 GMT, 12/19/89, reported in FBIS—*SOV*—89–243, 12/20/89, p. 79.
- ⁵¹Report delivered by L.A. Voronin, First Deputy Chairman of the USSR Council of Ministers, in *Pravda*, 9/26/89, Second edition, pp. 2–4, translated in FBIS—*SOV*—89–186, 9/27/89, pp. 49–64.
- ⁵²One expert hypothesized that Soviet enterprises might try to postpone exports to 1990, when the 100-percent currency bonus was to take effect.
- ⁵³Gold is the second export commodity after oil, according to an economist of the USSR Academy of Sciences Institute of World Economics and International Relations, in *Izvestiya*, 11/2/89.

Morning edition, p. 5, translated in FBIS-SOV-89-213, 11/6/89, pp. 97-100.

⁵⁴An article by V. Kamentsev, the Chairman of the State Foreign Economic Commission, in *Foreign Trade*, No. 2 (1989), pp. 2-4.

⁵⁵A. Sizov, "Agrarian Panorama of the World: On the Grain Market," *Sel'skaya zhizn'*, 2/4/89, p. 3, translated in FBIS-SOV-89-038, 2/28/89, pp. 73-75.

⁵⁶The three persons most closely involved in this work on the USSR are the two authors of this article, William Liefert and Edward Cook, and Robert Koopman.

⁵⁷Three ERS staff reports will be available soon presenting the work reported in this article. Two will examine the effect of Soviet agricultural trade liberalization on the world economy and Soviet economy. The third will present the estimates of Soviet subsidies to agricultural producers and consumers on which the model results depend.

⁵⁸The demand curves shift right by an amount equal to the estimated magnitude of excess demand before liberalization. For example, in 1986 excess demand for meat is estimated to equal 22 percent of the total amount of meat domestically consumed. An ERS Staff Report which explains how the excess demands are estimated should be completed soon.

⁵⁹Full citations for sources will be provided in one of the forthcoming ERS Staff Reports referred to earlier.

⁶⁰Alan J. Webb, Michael Lopez, and Renata Penn (eds.), *Estimate of Producer and Consumer Subsidy Equivalents: Government Intervention in Agriculture 1982 to 1987*, U.S. Dept. Agr., Econ. Res. Serv. (forthcoming).

⁶¹*Surveys of Views on the Impact of Granting Most-Favored-Nation Status to the Soviet Union*, USITC Publ. 2251 (1990), and *Special Report to the Congress and the East-West Foreign Trade Board on Probable Impact on U.S. Trade of Granting Most-Favored-Nation Treatment to the U.S.S.R.*, USITC Publ. 812 (1977).

⁶²The Byrd and Stevenson amendments and other legislation do not affect CCC export credit programs. The extension of most-favored-nation status (MFN), although also covered in the Jackson-Vanik amendment, is a separate issue. The USSR used \$550 million of CCC credit under a 1972 agreement.

⁶³Ann Hillberg Seitzinger and Philip L Paarberg, *A Survey of Theoretical and Empirical Literature Related to Export Assistance*, Staff Report AGES 89-34, U.S. Dept. Agr., Econ. Res. Serv., 1989, and Keith Crane and Daniel F. Kohler, "Removing Export-Credit Subsidies to the Soviet Bloc: Who Gets Hurt and by How Much," *Journal of Comparative Economics*, No. 9 (1985), pp. 371-390.

⁶⁴In 1982/83 only, Canada sold 6.5 million tons of grain under a government credit agreement. Canada's grain exports have averaged above the 5-million-tons-per-year called for under two agreements with the USSR since 1981. The USSR in early 1990 was not using a 1.5-billion Canadian dollar line of credit and had not used one that been available for the last 5 years.

⁶⁵*Journal of Commerce*, 2/9/90, p. A2.

⁶⁶The West German outright donation to the USSR of 220 million marks (\$130 million) in February 1990 for food purchases from EC countries may be associated with negotiations about

German reunification. The Canadians said that the February 1990 pork sale involved no credit. No credit arrangements are mentioned in reports of two recent USSR-Australian agricultural trade pacts.

⁶⁷The All-Union Fund target calls for the 15 Soviet republics, based on their agricultural specialization, to deliver a total of 77 million tons of grain to the State. The republic obligations are then to be supplemented by 8-10 million tons procured by the State using "economic incentives." V.I. Nazarenko, *Modern Agrarian Policy of the Soviet Union*, Moscow (1989), pp. 21-22.

⁶⁸V.I. Nazarenko, *Modern Agrarian Policy of the Soviet Union*, Moscow: VNITE APK (1989), APK: *Ekonomika, upravlenie*, No. 11 (1989), *Kommunist*, No. 16 (1989), *Sel'skaya zhizn'*, 7/13/89, and *Planovoe khozyaistvo*, No. 5 (1989).

⁶⁹*Planovoe khozyaistvo*, No. 10 (1989), p. 35.

⁷⁰*Vestnik agroproma*, No. 46 (1989).

⁷¹*Vestnik agroproma*, No. 1 (1988), p. 2.

⁷²*Pravda*, 6/23/89.

⁷³*Pravda*, 11/7/89.

⁷⁴APK: *Ekonomika, upravlenie*, No. 4 (1989), p. 6.

⁷⁵*Zernovoe khozyaistvo*, No. 9 (1987), APK SSSR, Moscow (1987), and Moscow TV, 3/17/89, translated in FBIS, 3/20/89.

⁷⁶*Izvestiya*, 6/27/89, p. 2.

⁷⁷*Moscow News*, No. 16 (1989).

⁷⁸Radio Moscow—World Service, 8/29/89, translated in FBIS, 8/29/89.

⁷⁹*Problemy razvitiya i razmeshcheniya agropromyshlennogo proizvodstva*, Vol. 123, Moscow: VNIIESKh (1988), p. 30.

⁸⁰APK: *Ekonomika, upravlenie*, No. 1 (1990), p. 10, and *Narodnoe khozyaistvo SSSR v 1988*, Moscow: Finansy i statistika (1989).

⁸¹*Izvestiya*, 10/12/89, p. 2, and *Ural'skie nivy*, No. 11 (1989), p. 17.

⁸²*Sel'skaya zhizn'*, 12/6/89, p. 1.

⁸³*Zootehnika*, No. 9 (1989), p. 2, and *Zhivotnovodstvo*, No. 11 (1983), p. 2.

⁸⁴*Zootehnika*, No. 9 (1989), p. 3.

⁸⁵*Zootehnika*, No. 1 (1989), p. 7.

⁸⁶Cook, Edward C., "The Soviet Mixed Feed Industry," *USSR Outlook and Situation Report*, U.S. Dept. Agr., Econ. Res. Serv., RS-85-4 (1985), pp. 9-10.

⁸⁷*Vestnik statistiki*, No. 12 (1989), p. 26.

⁸⁸*Sel'skaya zhizn'*, 12/30/89, p. 3.

⁸⁹*Sel'skaya zhizn'*, 5/25/89, and *Maslichnye kultury*, No. 5 (1987), p. 3, and No. 3 (1987), p. 3.

⁹⁰APK: *Ekonomika, upravlenie*, No. 7 (1989), p. 10.

⁹¹*Zemlya i lyudi*, No. 3 (1990).

⁹²*Vestnik agroproma*, No. 30 (1988), p. 3.

⁹³*Zootehnika*, No. 9 (1989), p. 3, and No. 4 (1989), p. 4; *Vestnik sel'skokhozyaistvennoi nauki*, No. 6 (1982), p. 62; and

List of Tables

- Agropromyshlennoe proizvodstvo: opyt, problemy i tendentsii razvitiya*, Moscow (1989), p. 76.
- ⁹⁴APK: *Ekonomika, upravlenie*, No. 3 (1989), p. 43, and *Sel'skaya zhizn'*, 5/25/89, p. 2.
- ⁹⁵Cuban raw sugar exports to the USSR during the 1980's averaged about 3.6 million tons. Two Soviet sources reported Cuban shipments at 4.3–4.4 million tons in 1989 (Moscow Television Service, in Russian, 1645 GMT, 2/20/90, translated in FBIS-SOV-90-042, 3/2/90, p. 67, and *Ogonek*, No. 7 (1990), pp. 25–26, translated in FBIS-SOV-90-058A, 3/26/90, pp. 10–13.)
- ⁹⁶*Sakharnaya sverka: proizvodstvo i pererabotka*, No. 4 (1989), p. 3.
- ⁹⁷*Svenska dagbladet*, 2/1/90, translated in FBIS-SOV-90-027, 2/8/90, and APK: *Ekonomika, upravlenie*, No. 10 (1989), p. 4.
- ⁹⁸*Pravda Ukrayiny*, 11/11/89.
- ⁹⁹*Sel'skaya zhizn'*, 2/4/90.
- ¹⁰⁰FBIS-SOV-89-210, 11/1/89, p. 52.
- ¹⁰¹USDA's Foreign Agricultural Service's TOFAS No. 109 from the USSR quoting from the *Sel'skoe khozyaistvo Uzbekistana*, January 1990.
- ¹⁰²*Sel'skaya zhizn'*, 3/28/1989, and *Pravda vostoka*, 3/11/1989.
- ¹⁰³*Komsomolets Uzbekistana*, 9/28/89, pp. 1–2, translated in JPRS-UPA-89-068, 12/19/89, pp. 47–52.
- ¹⁰⁴*Komsomolets Uzbekistana*, 9/28/89, pp. 1–2, translated in JPRS-UPA-89-068, 12/19/89, pp. 47–52.
- ¹⁰⁵*Sel'skaya zhizn'*, 3/22/90.
- ¹⁰⁶*Pravda vostoka*, 7/8/89.

Table

Table	Page
1—State budget deficit and share of GNP, USSR	4
2—Share of production and population by republic, USSR	5
3—Economic growth indicators, USSR	5
4—Total investment, investment in the agricultural sector, and investment financed through State budget allocations, USSR	6
5—Subsidies to the agroindustrial sector, USSR	9
6—Tractors, grain combines, and trucks: Inventories, deliveries, and scrapping rates, USSR	13
7—Mineral fertilizer production and deliveries to agriculture, USSR	14
8—Irrigated and drained land, USSR	15
9—Agricultural imports, 1989, USSR, by value	17
10—Agricultural imports, USSR, by value	19
11—Agricultural imports, quantities of principal items, USSR	19
12—Foreign trade, USSR	20
13—U.S. agricultural trade exports to the USSR	25
14—U.S. trade with the USSR	26
15—Major suppliers of selected agricultural goods to the USSR in 1988	27
16—U.S. agricultural imports from the USSR	28
17—Long-term agricultural purchase agreements, USSR	30
18—Production and State purchases of grains by major republics, USSR	32
19—Area, yield, and production of grain, USSR	34
20—Supply and use of grain, USSR	36
21—Grain production and procurements, USSR	37
22—U.S. grain sales to the USSR	37
23—U.S. EEP wheat purchases by the USSR	38
24—Unit value of wheat exports to the USSR by country of origin	38
25—Prime cost of producing grain (excluding corn), USSR	39
26—Livestock sector and feed supply measures, USSR	40
27—January 1 livestock numbers and animal units, USSR	41
28—Production of principal livestock products, USSR	41
29—Feed supplies by type in oat-unit equivalent, January 1 standard animal units, and feed per standard animal unit, USSR	42
30—Livestock production by industrial complexes and feed conversion coefficients, 1987, USSR	42
31—Meat production, animal inventories, and feed supplies, USSR	43
32—Consumption norms of selected food products and per capita consumption, USSR	44
33—Oilseed production, USSR	44
34—U.S. soybean and soybean meal exports to the USSR	45
35—Sugar production and trade, USSR	47
36—Area, yield, and production of selected crops, USSR	48
37—Agricultural exports, by value, USSR	49
38—Lint cotton production and trade, USSR	49
39—Cotton production, USSR	50

PUBLICATIONS AND DATA BASES YOU NEED ON THE USSR

REPORTS

The Soviet Livestock Sector: Performance and Prospects

USSR Oilseed Production, Processing, and Trade

**Efficiency and Growth in Agriculture: A Comparative Study of the Soviet Union,
United States, Canada, and Finland**

Effects on the USSR of the 1980 U.S. Embargo on Agricultural Exports

Agricultural Statistics of Eastern Europe and the Soviet Union, 1965-85

USSR Agricultural Trade (forthcoming)

DATA BASES ON DISKETTES*

USSR GRAIN DATA BY REPUBLIC. Official Soviet data on area, yield, and production for 12 grain crops in each of the 15 Soviet Republics for 1955-87. Three (3) disks.

USSR GRAIN PRODUCTION AND PROCUREMENT BY OBLAST. Data on total grain area, yield, production, and procurement for the 15 Soviet Republics and the constituent 125 oblasts and regions, for 1980 and 1985-87. One (1) disk.

USSR GRAIN SEEDING PROGRESS. Selected years 1971-88. Data cover small grains, pulses, and corn for grain on a weekly basis with daily levels interpolated. One (1) disk.

USSR GRAIN HARVESTING PROGRESS. Selected years 1971-88. Data cover fall and spring small grains, pulses, and corn for grain on a weekly basis with daily levels interpolated. One (1) disk.

USSR OILSEEDS. Production and use balances for 1955/56-1988/89 for 10 oilseeds, individually and in aggregate. These include area, yield, production, imports and exports of the oilseeds, and production, imports, and exports of 10 oilseed meals and oils. Five (5) disks.

USSR AGRICULTURAL TRADE DATA FOR 1987 AND 1988. Official Soviet value and quantity data on imports and exports of all identified agricultural commodities and commodity groups, machinery, chemicals, and selected processed agricultural products, in total and by country trading partner. Also includes official Soviet ruble-dollar exchange rate and ruble unit value estimates. Two (2) disks.

USSR AGRICULTURAL TRADE DATA FOR 1986. Official Soviet value and quantity data on imports and exports of all identified agricultural commodities and commodity groups, machinery, chemicals, and selected processed agricultural products, in total and by country trading partner. Also includes dollar value estimates and ruble and dollar unit value estimates. Two (2) disks.

U.S.-USSR BILATERAL AGRICULTURAL TRADE. U.S. data on agricultural exports to and imports from the USSR, total and by specific commodities, value and quantity, calendar 1970-88 and fiscal 1969/70-1988/89, plus total U.S.-USSR trade. One (1) disk.

USSR TRADE COMPENDIUM. Official USSR data on the value and quantity of total agricultural imports and exports by commodities, 1970-88; imports by country of origin, 1955-88, for wheat, corn, barley, rye, oats, wheat flour, rice, soybeans, raw and refined sugar, and cotton; imports by country of origin, 1970-88, for red meat and poultry; imports by type, 1955-88, for oilseeds, vegetable oil, and all meat; exports by country of destination, 1955-88, for wheat, corn flour, and rice; exports by country of destination, 1970-88, for sunflowerseed oil, refined sugar, and cotton; and exports by type, 1955-88, for vegetable oil and meat; and value data on total Soviet imports to and exports from the West, socialist countries, and developing countries, 1955-88. Six (6) disks.

AGRICULTURAL STATISTICS OF EASTERN EUROPE AND USSR. Official data for the USSR, Bulgaria, Czechoslovakia, GDR, Hungary, Poland, Romania, and Yugoslavia for 1965-85 on land use, population, agricultural inputs, area, yield, and production of 22 crops, livestock inventories, meat, milk, butter, egg, and wool production, and food consumption.

FOR INFORMATION ABOUT ORDERING, CONTACT THE:

USSR SECTION, ERS/ATAD/CPE, U.S. DEPARTMENT OF AGRICULTURE

1301 NEW YORK AVENUE, NW, WASHINGTON, DC 20005-4788

PHONE 202-786-1621

*Many updated or new; all LOTUS 1-2-3, 5.25" disks

United States
Department of Agriculture
1301 New York Avenue N. W.
Washington, D. C. 20005-4788

OFFICIAL BUSINESS
Penalty for Private Use, \$300

FIRST-CLASS MAIL
POSTAGE & FEES PAID
U.S. Dept. of Agriculture
Permit No. G-145

Moving? To change your address, send this sheet with label intact, showing new address, to EMS Information, Rm. 228, 1301 New York Ave., N.W. Washington, D.C. 20005-4788

